ORDER NO. ARD8306025

Service Manual

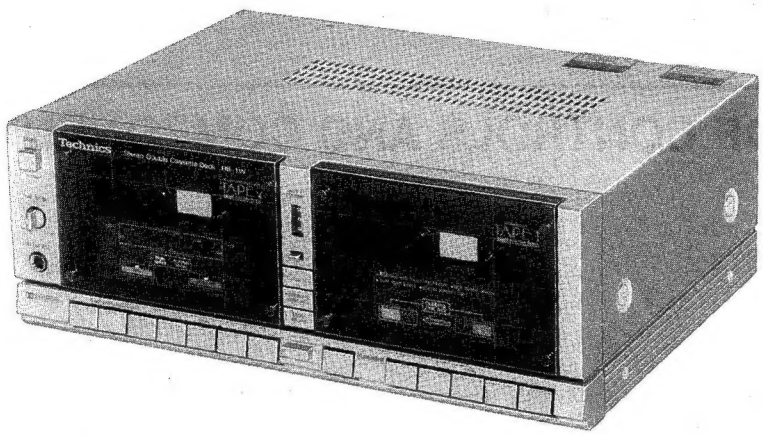
Cassette Deck

315 Series Mini-Size Double Cassette Deck with Phono Synchro-Recording

RS-1W

(Silver Face / Black Face)

DOLBY SYSTEM



This is the Service Manual for the following areas.
- [D] ..... For all European areas except United Kingdom.
- [B] ..... For United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.
- [A] ..... For Australia.

RS-1W in black is also available in some countries.

RS-M24 MECHANISM SERIES

Specifications

Track System:	Tape Deck 1; 4-track 2-channel stereo playback Tape Deck 2; 4-track 2-channel stereo recording and playback
Tape Speed:	4.8cm/s
Wow and Flutter:	0.048% (WRMS), ±0.14% (DIN)
Frequency Response:	Metal tape; 20~19,000Hz 30~18,000Hz (DIN) 40~17,000Hz ±3dB CrO_2 tape; 20~18,000Hz 30~17,000Hz (DIN) 40~16,000Hz ±3dB Normal tape; 20~17,000Hz 30~16,000Hz (DIN) 40~15,000Hz ±3dB
Signal-to-noise Ratio:	Dolby* B NR in; 67dB (CCIR) NR out; 57dB (Signal level = max. input level A weighted, CrO_2 type tape)
Fast Forward and Rewind Time:	Approx. 90 seconds with C-60 cassette tape
Inputs:	MIC; sensitivity 1mV, applicable microphone impedance 400Ω~10kΩ LINE; sensitivity 200mV, input impedance 47kΩ or more
Outputs:	LINE; output level 400mV, output impedance 2.7kΩ or less
Bias Frequency:	105kHz
Heads:	Tape Deck 1; 1 AX head for playback Tape Deck 2; 1-AX (AMORPHOUS) head for record/playback 1-double-gap ferrite head for erasure
Motor:	Electrical governor motor
Power Requirements:	[D] .....AC; 220V, 50-60Hz [B][N] ...AC; 110/125/220/240V, 50-60Hz Pre-set power voltage 240V [A] .....AC 240V, 50-60Hz
Power Consumption:	[D][B] ...13W [N][A] ...12W
Dimensions (W×H×D):	31.5cm×11.6cm×23.4cm
Weight:	4.6kg

Design and specifications are subject to change without notice.
*'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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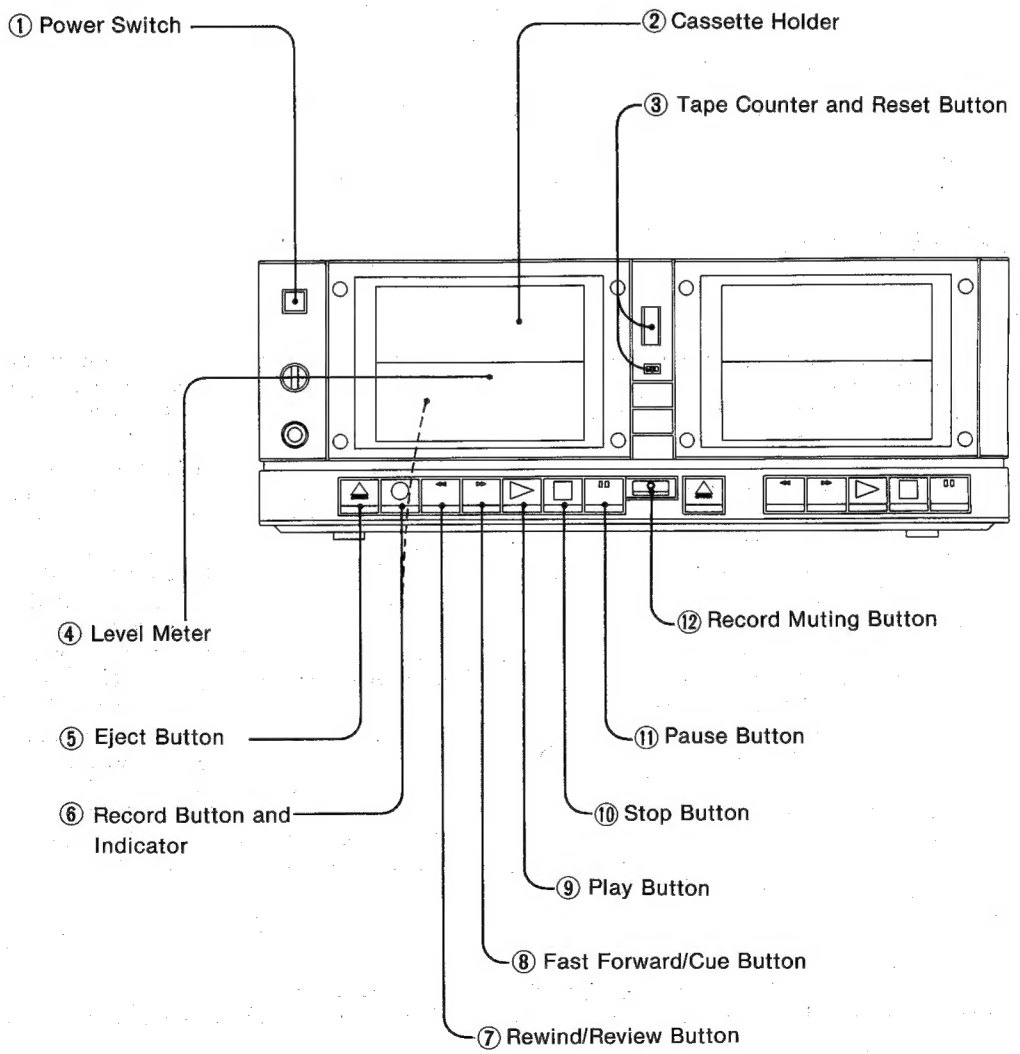
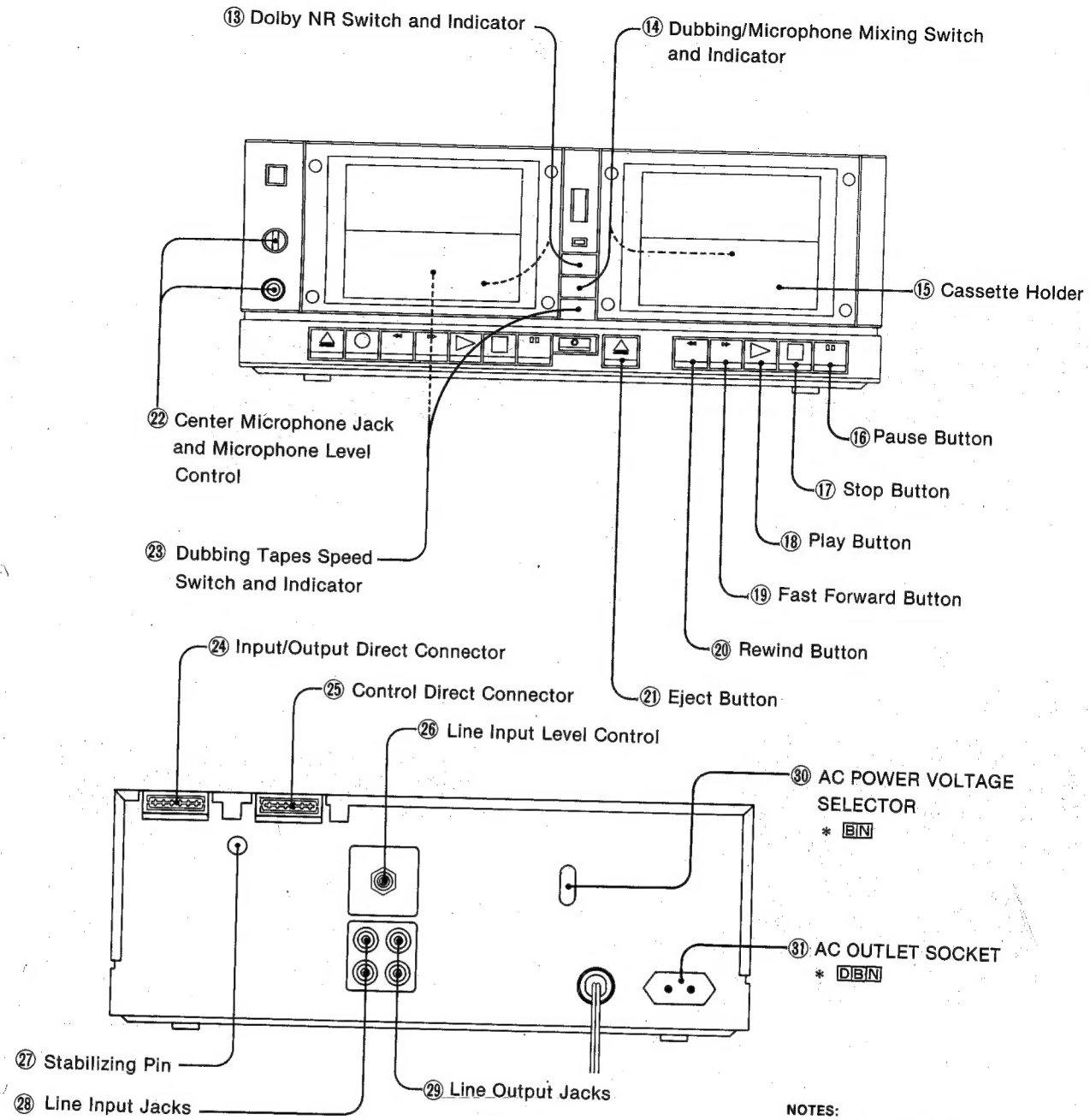
LOCATION OF CONTROLS AND COMPONENTS

TAPE 2

(For Recording and Playback)





NOTES:
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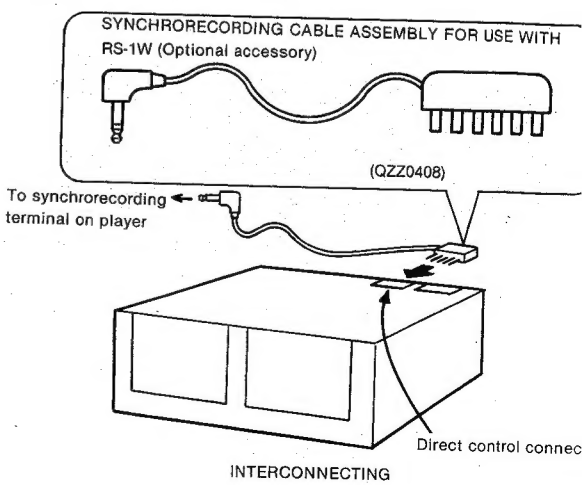
ABOUT SYNCHRO-RECORDING

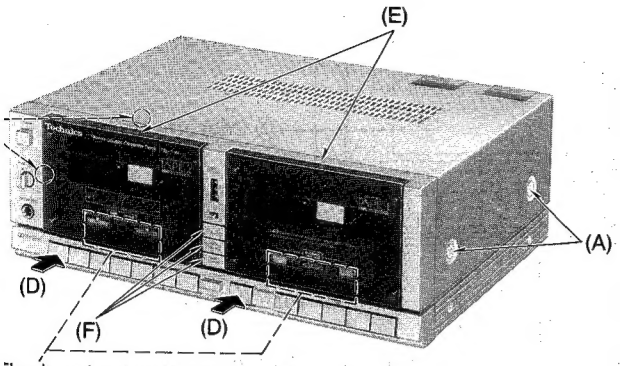
Why use synchro-recording?
When the tape deck's Record Button is pushed, and the deck placed in the record-pause condition, when the stylus of the tonearm is lowered onto the record surface, the Pause mode will be automatically released and recording will begin. When the stylus leaves the surface of the record, approximately four seconds of non-recorded interval will be allowed to pass before the recording stops automatically. This function is called synchro-recording.

NOTE: For synchrorecording with a system provided with no direct control connector, an optional synchrorecording cable assembly, QZZ0408, is required.



INTERCONNECTING

DISASSEMBLY INSTRUCTIONS



'he head azimuth can be adjusted
)y removing the cassette lid.

Fig. 1

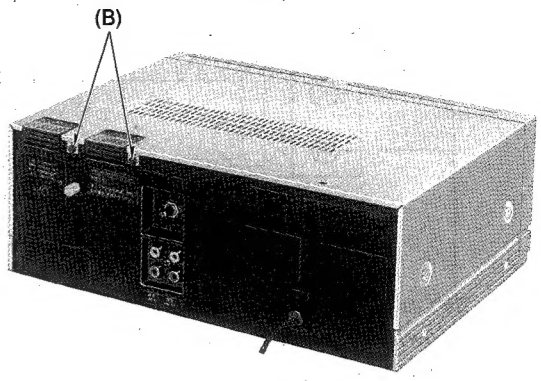
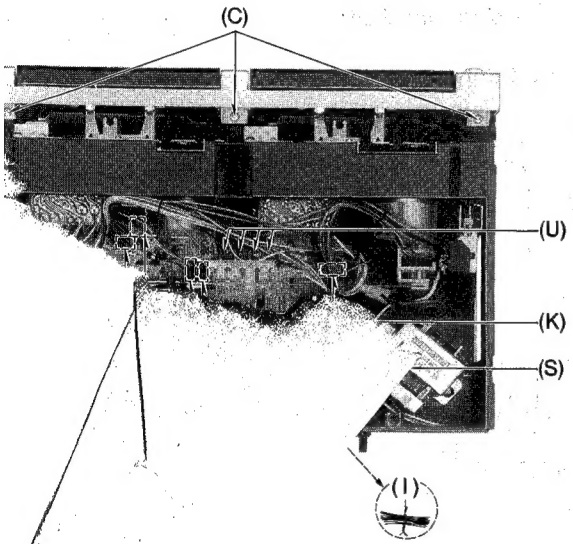


Fig. 2



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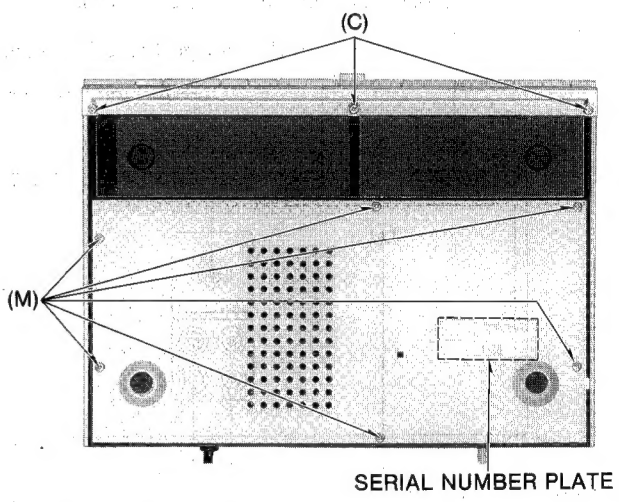


Fig. 4

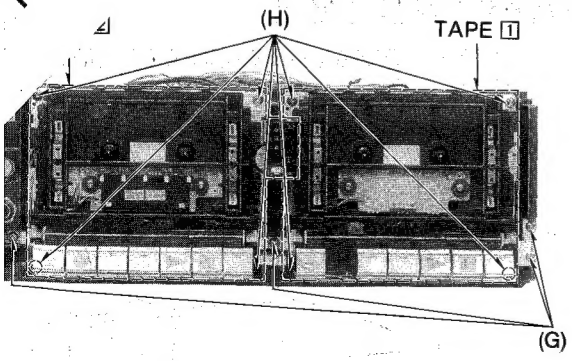


Fig. 5

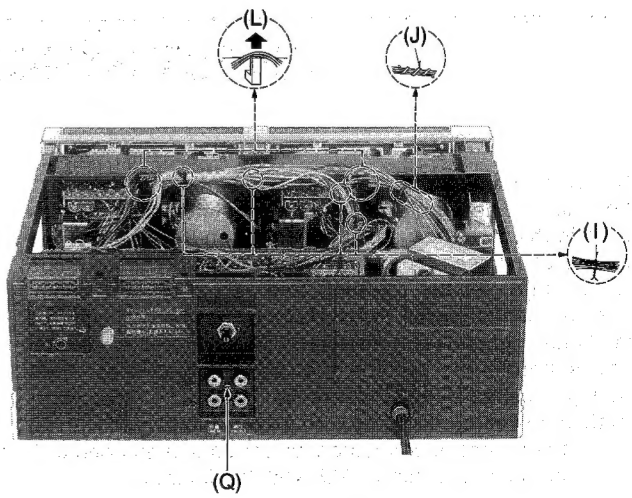
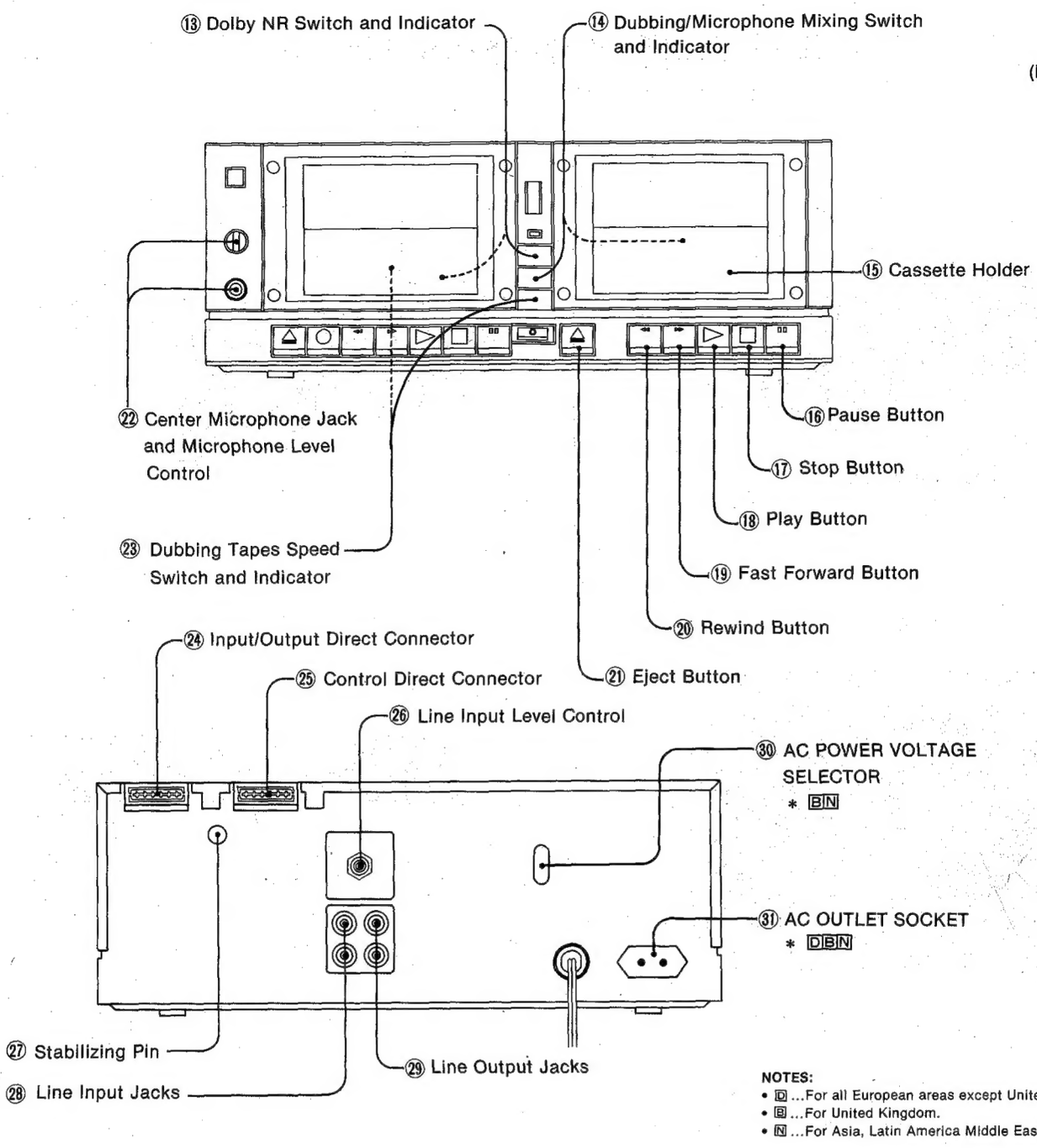


Fig. 6

TAPE 1
(For Playback)



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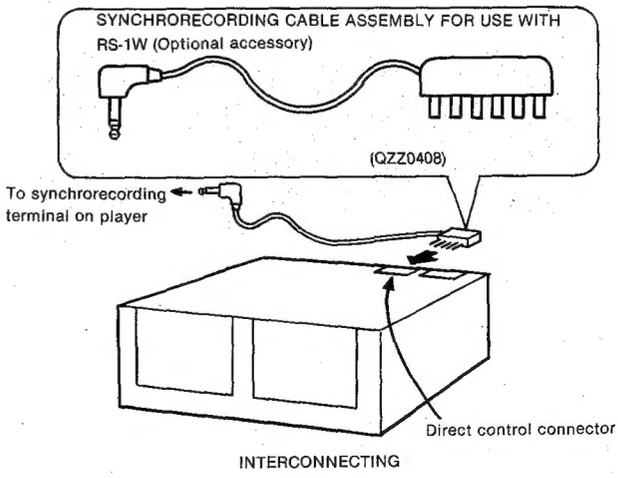

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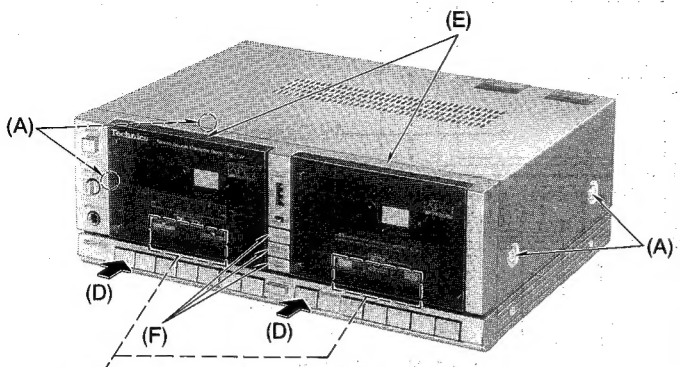
DISASSEMBLY INSTRUCTIONS



The head azimuth can be adjusted by removing the cassette lid.

Fig. 1

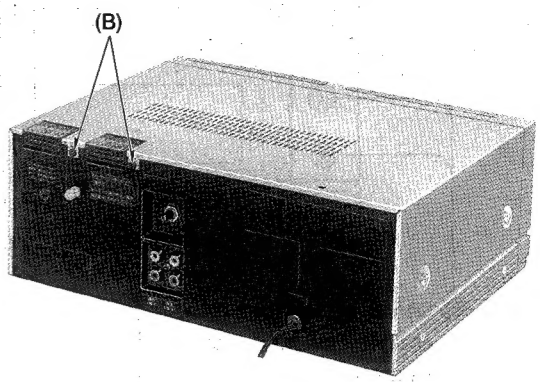


Fig. 2

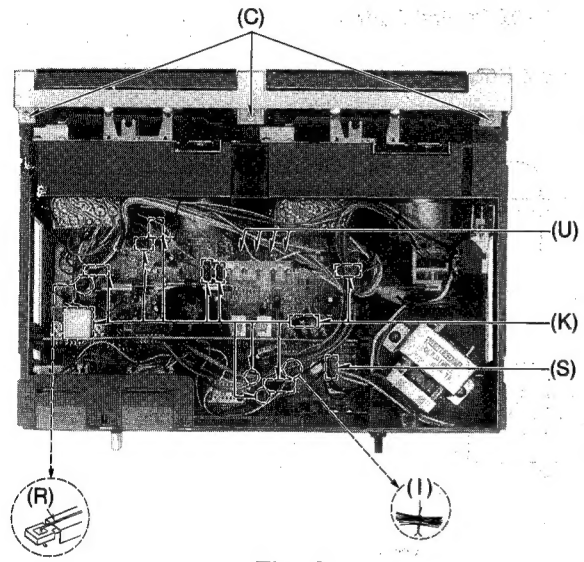


Fig. 3

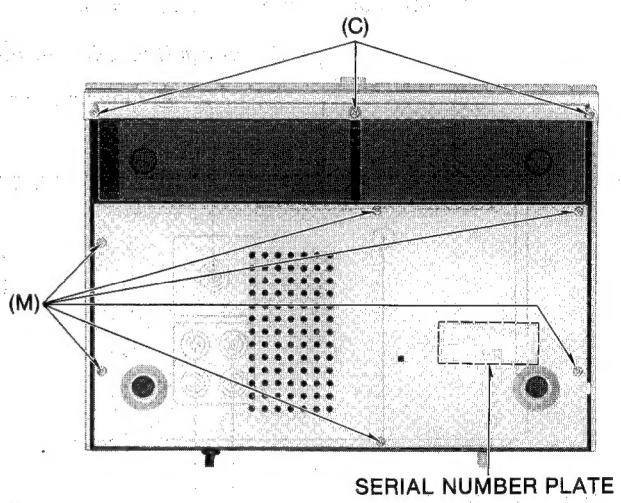


Fig. 4

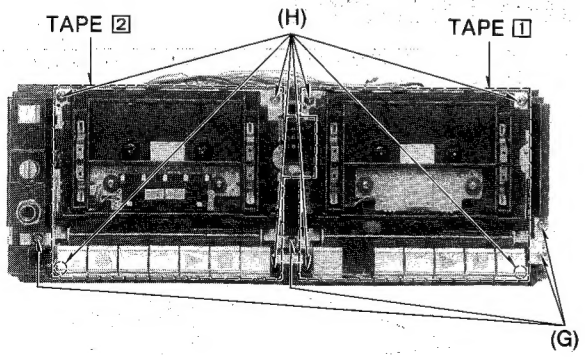


Fig. 5

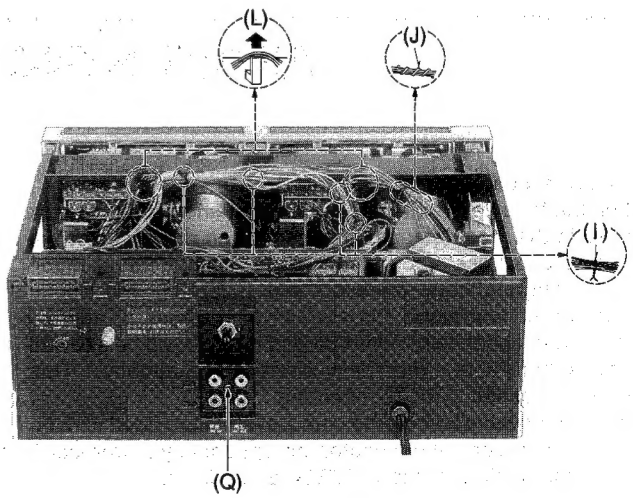


Fig. 6

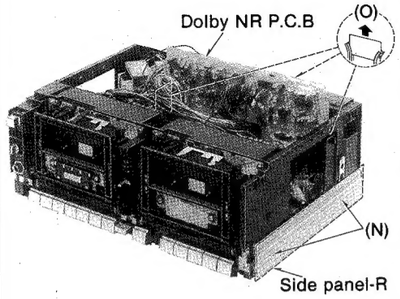


Fig. 7

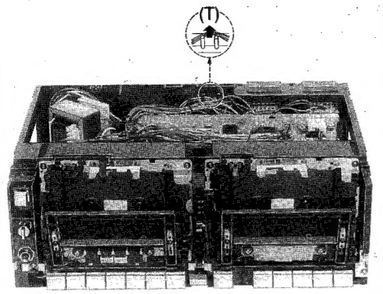


Fig. 8

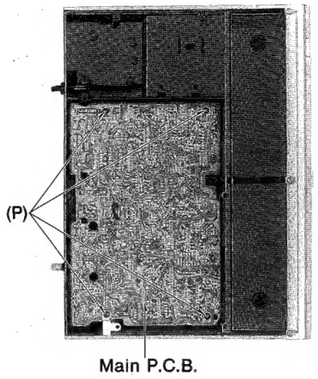


Fig. 9

Ref No.	Procedure	To remove —.	Remove —.	Shown in fig. —.
1	1	Main case	• 4 ornament screws.....(A) • 2 screws .....(B)	1 2
2	1 → 2	Front panel ass'y	• 6 screws .....(C) • Push the eject buttons .....(D) • Pull out the cassette lids .....(E) • Pull out the Dolby, dubbing and tape speed buttons .....(F)	3, 4 1 1 1
3	1 → 2 → 3	Mechanism unit	• 4 screws .....(G) • 8 screws .....(H) • Nylon binder .....(I) • Metal clamper.....(J) • Pull out the connectors .....(K) • Remove the wiers from the wire clamp .....(L) Note: Remove the tape [2] mechanism unit before removing the tape [1] mechanism unit.	5 5 3, 6 6 3 6
4	4	Bottom cover	• 6 screws .....(M)	4
5	1 → 5	Side panel-R	• 2 screws .....(N)	7
6	1 → 6	Dolby NR P.C.B	• The P.C board is locked by the hook. Unhook the P.C board and pull it in the direction of arrow as shown in Fig. (O).	7
7	1 → 4 → 5 → 6 → 7	Main P.C.B	• 4 screws .....(P) • 1 screw .....(Q) • Recording wire .....(R) • Pull out the connectors .....(K) & (S) • Remove the wiers from the wire clamp. .....(T) • Pull out the Dolby, dubbing and tape speed switch rods .....(U)	9 6 3 3 8 3

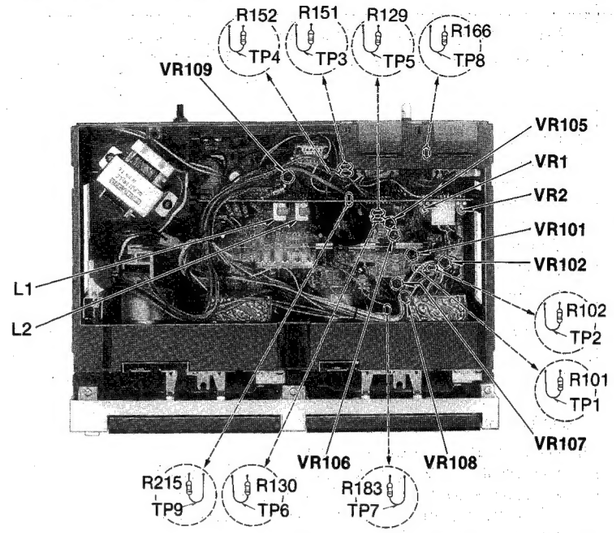
* Serial No. Indication

- The serial number plate of this product is attached to the bottom cover. (Shown in fig. 4.)

OPERATING PRECAUTIONS

* If the Record Button or the Play Button is pressed immediately after the power has gone off, the head section will remain raised. This means that the tape will not be ejected even when the Eject Button is pressed. In cases like this, switch on the power again.

MEASUREMENT AND ADJUSTMENT METHODS

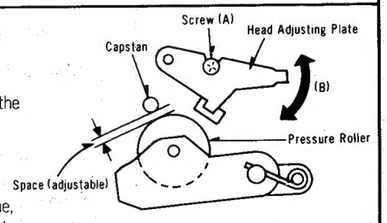


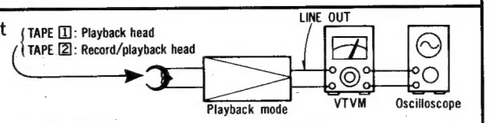
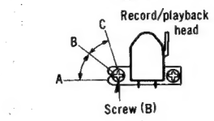
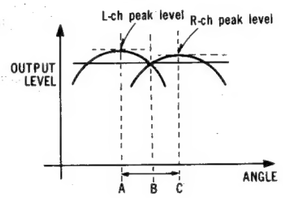
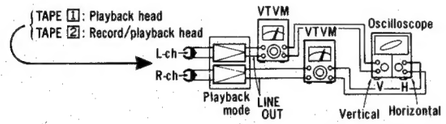
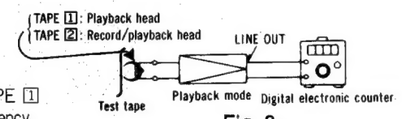
- TP8: Test point for line A.G.C off Grounding this test point disables line A.G.C. [Applied in erase ratio measurements]
- TP9: Test point for tape speed change Grounding this test point places the recorder in the doubled tape-speed mode. [Applicable in tape speed adjustments]

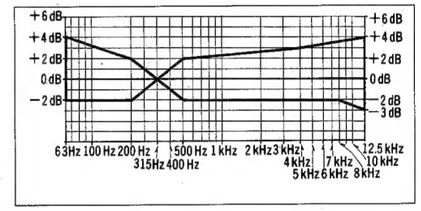
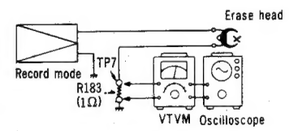
Fig. 1

NOTES: Keep good condition, set switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: 20 ± 5°C (68 ± 9°F)
- Dolby NR switch: OUT
- LINE input level control: Center
- Microphone level control: Minimum
- Dubbing/Mixing switch: OFF
- Tape speed switch: Normal

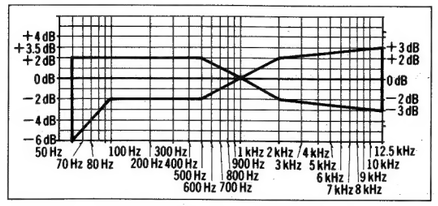
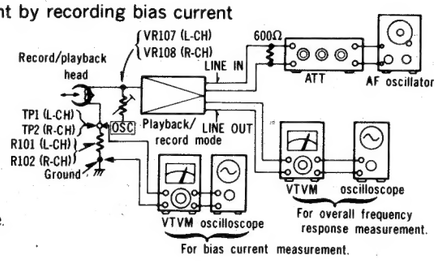
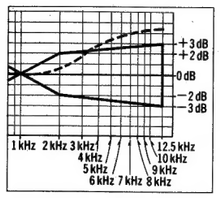
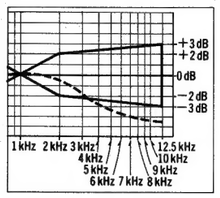
ITEM	MEASUREMENT & ADJUSTMENT
Ⓐ Head position adjustment [TAPE [1], TAPE [2]] Condition: • Playback and pause mode	(The head adjusting plate is provided to adjust the tape touch of the head in cue or review mode.) 1. Press the playback button and pause button. 2. Measure the space between the pressure roller and the capstan. Standard value: 0.5 ± 0.3 mm 3. If the measured value is not within the standard value, untighten screw (A), and slide the head adjusting plate in the direction of arrow (B) for adjustment.  Fig. 2

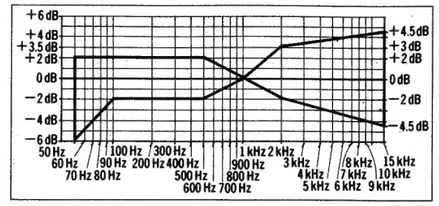
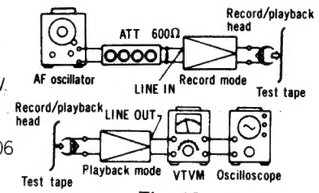
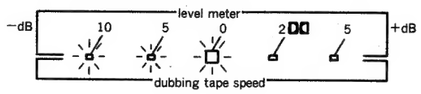
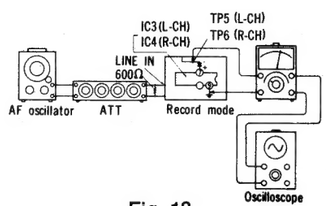
ITEM	MEASUREMENT & ADJUSTMENT
Ⓑ Head azimuth adjustment **[TAPE 1, TAPE 2]** Condition: • Playback mode Equipment: • VTVM • Oscilloscope • Test tape (azimuth) ··· QZZCFM	**L-ch/R-ch output balance adjustment** 1. Make connections as shown in fig. 3.  Fig. 3 2. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) in fig. 4 for maximum output L-ch and R-ch levels. When the output levels of L-ch and R-ch are not at maximum at the same time, readjust as follows. 3. Turn the screw shown in fig. 4 to find angles A and C (points where peak output levels for left and right channels are obtained). Then, locate the angle B between angles A and C, i.e., a point where L-ch and R-ch output levels come together at maximum. (Refer to figs. 4 and 5.)  Fig. 4  Fig. 5 **L-ch/R-ch phase adjustment** 4. Make connections as shown in fig. 6. 5. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) shown in fig. 4 so that pointers of the two VTVMs swing to maximum and a waveform as illustrated in fig. 7 is obtained on the oscilloscope.  Fig. 6  Fig. 7
Ⓒ Tape speed **[TAPE 1, TAPE 2]** Condition: • Playback mode • Dubbing speed switch ··· Normal/high Equipment: • Digital electronic counter or frequency counter • Test tape··· QZZCWAT	**Normal speed adjustment** **TAPE 1**  Fig. 8 1. Make connections as shown in fig. 8. 2. Set the dubbing speed switch to Normal. 3. Play the test tape (QZZCWAT) with the TAPE 1 head, and measure the playback signal frequency. If the playback signal frequency does not conform to the standard value, adjust the normal speed adjustment VR for the TAPE 1 head (See fig. 1). **Standard value: TAPE 1 (Playback deck: Normal speed) 3010±45Hz** **TAPE 2** 4. Play the test tape (QZZCWAT) with the TAPE 2 head, and measure the playback signal frequency, and then adjust the normal speed adjustment VR for the TAPE 2 head so that the playback signal frequency is 15Hz lower than the output signal frequency after adjustment of TAPE 1. **High speed adjustment** **Note:** Perform high speed adjustment about 10 seconds after the start of motor rotation. 1. Make connections as shown in fig. 8. 2. Set the dubbing/mixing switch to off, and set the dubbing speed switch to high. Short between TP9 and ground. 3. Play the test tape (QZZCWAT) with the TAPE 1 and measure the playback signal frequency. If the playback signal frequency does not conform to the standard value, adjust the high speed adjustment VR for the TAPE 1 head (See fig. 1). **Standard value: TAPE 1 (Playback deck: Normal speed) 6020±90Hz** 4. Play the test tape (QZZCWAT) with the TAPE 2 head, and measure the playback signal frequency, and then adjust the high speed adjustment VR for the TAPE 2 head so that the playback signal frequency is 30Hz lower than the output signal frequency after adjustment of TAPE 1. 5. After high speed adjustment, remove the short between TP9 and ground.

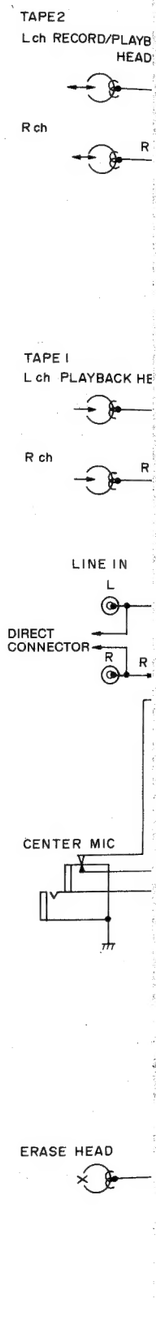
ITEM	MEASUREMENT & ADJUSTMENT
	Tape speed fluctuation **TAPE 1, TAPE 2** Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows: $\text{Tape speed fluctuation (Normal speed)} = \frac{f_1 - f_2}{3{,}000} \times 100(\%)$ f_1 = maximum value, f_2 = minimum value $\text{Tape speed fluctuation (High speed)} = \frac{f_1 - f_2}{6{,}000} \times 100(\%)$ f_1 = maximum value, f_2 = minimum value **Standard value: Less than 1%** **Note:** Please use non metal type screwdriver when you adjust tape speed on this unit.
Ⓓ Playback frequency response **[TAPE 1, TAPE 2]** Condition: • Playback mode • Normal tape mode Equipment: • VTVM • Oscilloscope • Test tape··· QZZCFM	1. Test equipment connection is shown in fig. 3. 2. Place UNIT into Normal tape mode. 3. Playback the frequency response test tape (QZZCFM). 4. Measure output level at 315Hz, 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT. 5. Make measurement for both channels. 6. Make sure that the measured value is within the range specified in the frequency response chart (shown in fig. 9). **Playback frequency response chart** **[TAPE 1, TAPE 2]**  **Fig. 9**
Ⓔ Playback gain **[TAPE 1, TAPE 2]** Condition: • Playback mode • Normal tape mode Equipment: • VTVM • Oscilloscope • Test tape··· QZZCFM	1. Test equipment connection is shown in fig. 3. 2. Playback standard recording level portion on test tape (QZZCFM 315Hz, 0dB), and using VTVM measure the output level at LINE OUT. 3. Make measurement for both channels. **Standard value: TAPE 1, 2; 0.4V±1dB [0.42V; at test point TP3 (L-CH) and TP4 (R-CH)]** **Adjustment** 1. If measured value is not within standard, adjust VR1 (TAPE 1: L-CH), VR2 (TAPE 1: R-CH), VR101 (TAPE 2: L-CH), VR102 (TAPE 2: R-CH). 2. After adjustment check"Playback frequency response" again.
Ⓕ Erase current **[TAPE 2]** Condition: • Record mode • Metal tape mode Equipment: • VTVM • Oscilloscope	1. Test equipment connection is shown in fig. 10. 2. Place UNIT into Metal tape mode. 3. Press the record and pause buttons. 4. Read voltage on VTVM and calculate erase current by following formula: $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R183}}{1\,(\Omega)}$  Fig. 10 **Standard value: 160^{+10}_{-20}mA (Metal position)** **Adjustment** 5. If the measured value is not within the standard, make an open or short circuit on the connection points (A) and (B) as required for a reading within the standard. [Refer to Table 1.] The correction values referred to are deviations from the level that is obtained when both (A) and (B) are short-circuited.

Connection Point (A)	Connection Point (B)	Correction Value
Short	Short	0dB
Short	Open	1dB Up
Open	Short	2dB Up
Open	Open	3dB Up

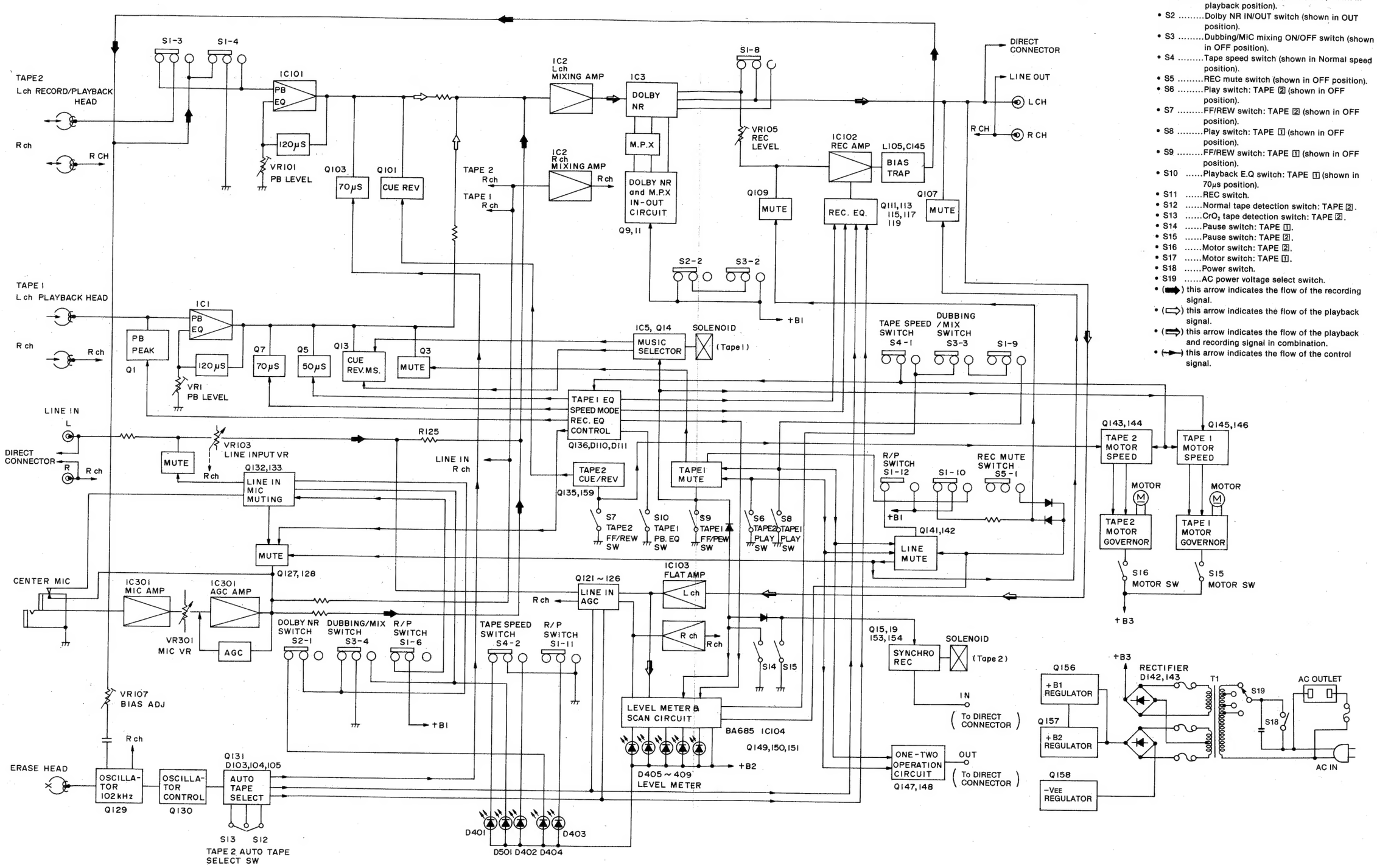
Table 1

ITEM	MEASUREMENT & ADJUSTMENT
Ⓖ Overall frequency response [TAPE ②] Condition: • Record/playback mode • Normal tape mode • CrO_2 tape mode • Metal tape mode • LINE input level control ··· Center Equipment: • VTVM • AF oscillator • ATT • Oscilloscope • Resistor (600Ω) • Test tape (reference blank tape) ···QZZCRA for Normal ···QZZCRX for CrO_2 ···QZZCRZ for Metal	**Note** Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response). **Overall frequency response chart (Normal) [TAPE ②]**  **Fig. 11** **Overall frequency response adjustment by recording bias current**  **Fig. 12** (Recording equalizer is fixed.) 1. Make connections as shown in fig. 12. 2. Place UNIT into normal tape mode and load the test tape (QZZCRA). 3. Input a 1kHz, −14dB signal through LINE IN. Place the set in record mode. 4. Fine adjust the attenuator to obtain 0.4V LINE OUT output. • Make sure that the input signal level is −14±4dB with 0.4V output voltage. 5. Adjust the attenuator to reduce the input signal level by 20dB. 6. Adjust the AF oscillator to generate 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz and 12.5kHz signals, and record these signals on the test tape. 7. Playback the signals recorded in step 6, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 11). (If the curve is within the charted specifications, proceed to steps 8, 9 and 10.) If the curve is not within the charted specifications, adjust as follows; **Adjustment Ⓐ:** When the curve exceeds the overall frequency response chart specifications (fig. 11) as shown in fig. 13.  **Fig. 13** 1) Increase bias current by turning VR107 (L-CH) and VR108 (R-CH). (See fig. 1 on page 6.) 2) Repeat steps 6 and 7 to confirm. (Proceed to steps 8, 9 and 10 if the curve is now within the charted specifications in fig. 11.) 3) If the curve still exceeds the specifications (fig. 11), increase bias current further and repeat steps 6 and 7. **Adjustment Ⓑ:** When the curve falls below the overall frequency response chart specifications (fig. 11) as shown in fig. 14.  **Fig. 14** 1) Reduce bias current by turning VR107 (L-CH) and VR108 (R-CH). 2) Repeat steps 6 and 7 to confirm. (Proceed to steps 8, 9 and 10 if the curve is now within the charted specifications in fig. 11.) 3) If the curve still falls below the charted specifications (fig. 11), reduce bias current further and repeat steps 6 and 7.

ITEM	MEASUREMENT & ADJUSTMENT
	Overall frequency response chart (CrO_2, Metal) [TAPE ②] 8. Place UNIT into CrO_2 tape mode. 9. Change test tape to QZZCRX, and record 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz and 15kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO_2 tapes (fig. 15).  **Fig. 15** 10. Place UNIT into Metal tape mode change test tape to QZZCRZ and record 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz, 12.5kHz and 15kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 15). 11. Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode. • Read voltage on VTVM and calculate bias current by following formula: $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$ **around 190μA (Normal position)** **around 250μA (CrO_2 position)** **around 380μA (Metal position)** } **: measured at TP1 (L-CH) and TP2 (R-CH)**
Ⓗ Overall gain [TAPE ②] Condition: • Record/playback mode • Normal tape mode • LINE input level control ··· Center • Standard input level; MIC ····· −60±4dB LINE IN ··· −14±4dB Equipment: • VTVM • AF oscillator • ATT • Oscilloscope • Resistor (600Ω) • Test tape (reference blank tape) ···QZZCRA for Normal	1. Test equipment connection is shown in fig. 16. 2. Place UNIT into Normal tape mode, and load the test tape (QZZCRA). 3. Place UNIT into record mode. 4. Supply 1kHz signal (−14dB) from AF oscillator, through ATT to LINE IN. 5. Adjust ATT until monitor level at LINE OUT becomes 0.4V. 6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.4V. 7. If measured value is not 0.4V, adjust VR105 (L-CH), VR106 (R-CH) 8. Repeat from step (2).  **Fig. 16**
Ⓘ Level meter [TAPE ②] Condition: • Record mode • LINE input level control ··· Center Equipment: • VTVM • AF oscillator • ATT • Resistor (600Ω)	1. Test equipment connection is shown fig. 16. 2. Place UNIT into record mode. 3. Supply 1kHz signal (−14dB) from AF oscillator, through ATT to LINE IN. 4. Adjust ATT until monitor level at LINE OUT becomes 0.4V. 5. Then adjust VR109 until then 0dB indication segment comes on.  **Fig. 17**
Ⓙ Dolby NR circuit [TAPE ②] Condition: • Record mode • Dolby NR switch ··· IN/OUT • LINE input level control ··· Center Equipment: • VTVM • AF oscillator • ATT • Oscilloscope • Resistor (600Ω)	1. Test equipment connection is shown in fig. 21. 2. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain 17.5mV at TP5 (L-CH), TP6 (R-CH) (frequency 5kHz). 3. Confirm that the value at IN position is 8(±2.5)dB greater than the value at OUT position of Dolby NR switch.  **Fig. 18**



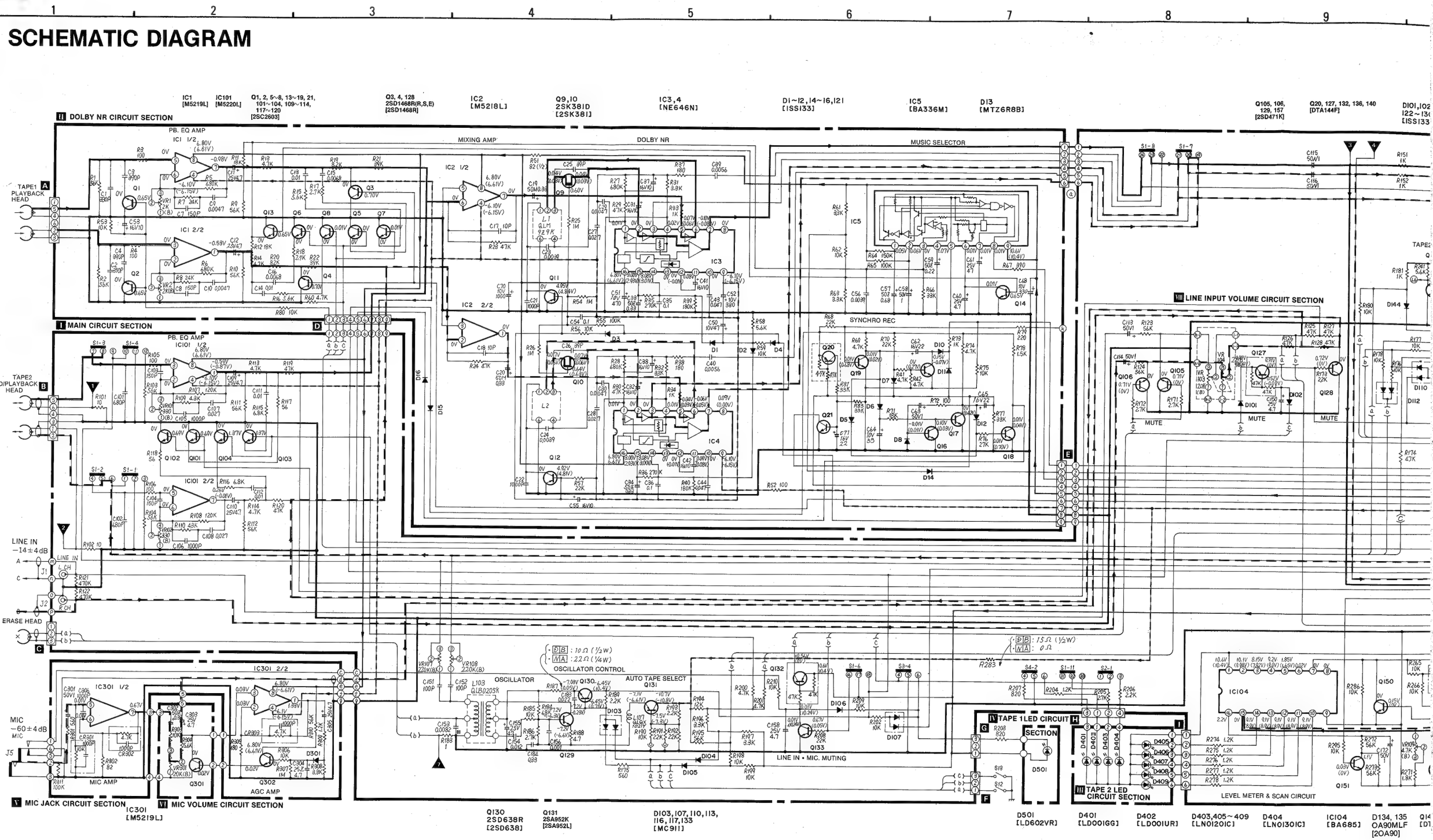
BLOCK DIAGRAM (L-ch only)



NOTES:

- S1 .....Record/playback select switch (shown in playback position).
- S2 .....Dolby NR IN/OUT switch (shown in OUT position).
- S3 .....Dubbing/MIC mixing ON/OFF switch (shown in OFF position).
- S4 .....Tape speed switch (shown in Normal speed position).
- S5 .....REC mute switch (shown in OFF position).
- S6 .....Play switch: TAPE 2 (shown in OFF position).
- S7 .....FF/REW switch: TAPE 2 (shown in OFF position).
- S8 .....Play switch: TAPE 1 (shown in OFF position).
- S9 .....FF/REW switch: TAPE 1 (shown in OFF position).
- S10 .....Playback E.Q switch: TAPE 1 (shown in 70μs position).
- S11 .....REC switch.
- S12 .....Normal tape detection switch: TAPE 2.
- S13 .....CrO_2 tape detection switch: TAPE 2.
- S14 .....Pause switch: TAPE 1.
- S15 .....Pause switch: TAPE 2.
- S16 .....Motor switch: TAPE 2.
- S17 .....Motor switch: TAPE 1.
- S18 .....Power switch.
- S19 .....AC power voltage select switch.
- (➡) this arrow indicates the flow of the recording signal.
- (⇨) this arrow indicates the flow of the playback signal.
- (⇒) this arrow indicates the flow of the playback and recording signal in combination.
- (⇢) this arrow indicates the flow of the control signal.

SCHEMATIC DIAGRAM



Q105, 106, 129, 157 [2SD471K]

Q20, 127, 132, 136, 140 [DTA144F]

DI01,102,104~106,109,111,114,115,118,120, 122~130,132,137,138,144~148,301 [1SS133]

Q135, 137, 139, 142 2SA1115E [2SA1115]

Q107, 108 2SD1468(R,S,E) [2SD1468R]

IC102 [M5218L]

Q11, 12, 115, 116 2SA1115E [2SA1115]

LINE INPUT VOLUME CIRCUIT SECTION

TAPE2 MOTOR SPEED

TAPE1 MOTOR SPEED

ONE • TWO OPERATION CIRCUIT

REC AMP

REC EQ

LINE IN AGC

FLAT AMP

SYNCHRO REC

TAPE 2 MOTOR GOVERNOR

TAPE 1 MOTOR GOVERNOR

SYNCHRO REC SOLENOID

MUSIC SELECTOR SOLENOID

LEVEL METER & SCAN CIRCUIT

VII DIRECT CONNECTOR-B CIRCUIT SECTION

DIRECT CONNECTOR B

4 PLAY
3 +B (10V)
2 SYNCHRO REC

DIRECT CONNECTOR A

6 R CH IN
5 L CH IN
4 GND
3 R CH OUT
2 GND
1 L CH OUT

X DIRECT CONNECTOR-A CIRCUIT SECTION

NOTES:

- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  - No mark .....Voltage values at OUT (NR select switch) mode.
  - ( ) .....Voltage values at record mode.
  - STOP .....Voltage values at stop mode.
  - DUB. HIGH SPEED ...Voltage values at dubbing high tape speed mode.
  - For measurement use VTVM.
- (▬▶) indicates B+ (bias).
- (▪▪▶) indicates B− (bias).
- (▪▪▪) indicates the flow of the playback signal. (NR out).
- (▬▶) indicates the flow of the recording signal. (NR out).
- Important safety notice
  Components identified by △ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

△T1 240V 220V 125V 110V S19 S18 △AC OUTLET △C601 0.01 △AC IN △F8 0.3A

* For Asia, Latin America, Middle East and Africa areas.

△T1 △C601 0.01 S18 AC IN

* For Australia.

△F7 T1A △T1 240V 220V 125V 110V S19 S18 △AC OUTLET △C601 0.01 AC IN △F6 T400mA △F5 T400mA

* For United Kingdom.

SPECIFICATIONS *Line input level controls...Center

Playback S/N ratio * Test tape...QZZCFM	Greater than 45dB
Overall distortion * Test tape ...QZZCRA for Normal ...QZZCRX for CrO_2 ...QZZCRZ for Metal	Less than 4%
Overall S/N ratio *Test tape...QZZCRX	Greater than 45dB (without NAB filter)

D403,405~409 [LN0120IC]

D404 [LN0130IC]

IC104 [BA685]

D134, 135 0A90MLF [2OA90]

Q149 [DTA124F]

D149,150 0A90M [0A90]

DI12,119,131 [MC921]

Q121~126,133,138,141, 143~148,150~153,159,301,302 [2SC2603]

IC103 [M5218L]

Q154 2SD985K [2SD985]

Q155 2SD9650 [2SD165]

Q156 2SD12650 [2SD1265]

Q158 2SB941P [2SB941]

DI39 [MTZ22C]

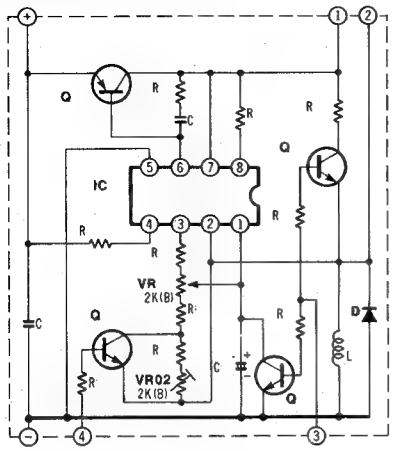
D140, 141 [SM112]

DI42, 143 [S1VB20]

NOTES:

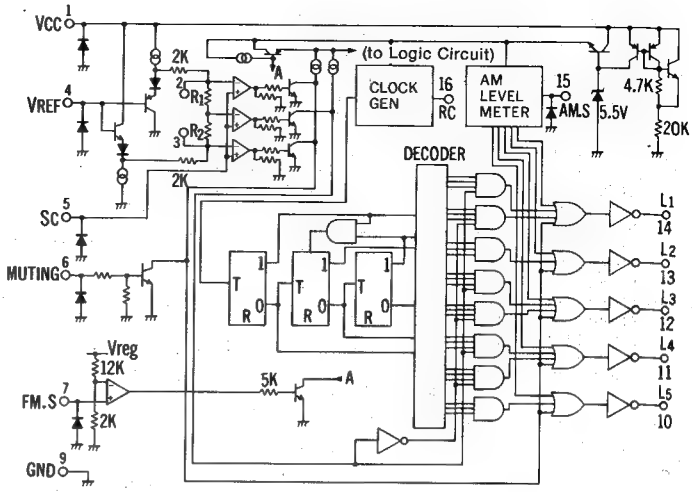
- [D] .....For all European areas except United Kingdom.
- [B] .....For United Kingdom.
- [N] .....For Asia, Latin America, Middle East and Africa areas.
- [A] .....For Australia.

IX MOTOR GOVERNER CIRCUIT (TAPE 1 & TAPE 2)



EQUIVALENT CIRCUITS

IC104 BA685



NOTES:

- S1.....Record/playback select switch (shown in playback position).
- S2.....Dolby NR IN/OUT switch (shown in OUT position).
- S3.....Dubbing/MIC mixing ON/OFF switch (shown in OFF position).
- S4.....Tape speed switch (shown in Normal speed position).
- S5.....REC mute switch (shown in OFF position).
- S6.....Play switch: TAPE 2 (shown in OFF position).
- S7.....FF/REW switch: TAPE 2 (shown in OFF position).
- S8.....Play switch: TAPE 1 (shown in OFF position).
- S9.....FF/REW switch: TAPE 1 (shown in OFF position).
- S10 .....Playback E.Q switch: TAPE 1 (shown in 70μs position).
- S11 .....REC switch.
- S12 .....Normal tape detection switch: TAPE 2.
- S13 .....CrO_2 tape detection switch: TAPE 2.
- S14 .....Pause switch: TAPE 1.
- S15 .....Pause switch: TAPE 2.
- S16 .....Motor switch: TAPE 2.
- S17 .....Motor switch: TAPE 1.
- S18 .....Power switch.
- S19 .....AC power voltage select switch.
- VR1, 2 .....Playback gain adjustment VR (TAPE 1).
- VR101, 102 .....Playback gain adjustment VR (TAPE 2).
- VR103, 104 .....LINE input level control.
- VR105, 106 .....Overall gain adjustment VR.
- VR107, 108 .....Bias current adjustment VR.
- VR109 .....Level meter gain adjustment VR.
- VR301 .....Center microphone volume control.
- Points (A), (B)...Erase current adjustment points.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
  1K = 1,000(Ω), 1M = 1,000k(Ω).
- Capacity are in micro-farads (μF) unless specified otherwise.
- The mark (▼) shows test point. e.g. ▼ = Test point 1.
- Described in the schematic diagram are two types of numbers; the supply parts numbers and production parts number for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.
  e.g. Q1
  2SC1844(E,F)◄—Production parts number
  [2SC1844E]◄—Supply parts number
  D212
  1S2473T77◄—Production parts number
  [MA161]◄—Supply parts numbers
- The supply parts number is described alone in the replacement parts list.

• This schematic diagram may be modified at any time with the development of new technology.

ELECTRICAL PARTS LIST

NOTES: RESISTORS

ERD .....Carbon
ERG .....Metal-oxide
ERS.....Metal-oxide
ERO .....Metal-film
ERX.....Metal-film
ERQ .....Fuse type metallic
ERC .....Solid
ERF.....Cement

CAPACITORS

ECBA .....Ceramic
ECG□.....Ceramic
ECK□.....Ceramic
ECC□.....Ceramic
ECF□.....Ceramic
ECQM.....Polyester film
ECQE .....Polyester film
ECQF .....Polypropylene

ECE□ .....Electrolytic
ECE□N ...Non polar electrolytic
ECQS .....Polystyrene
ECS□ .....Tantalum
QCS .....Tantalum

REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Ref. No.	Ref. No.	Part No.
RESISTORS		R 37, 38	ERDS2TJ181	R 68	ERDS2TJ223	R 111, 112	ERDS2TJ563	R 148	ERDS2TJ562	R 176, 177, 178, 179, 180	ERDS2TJ103
		R 39, 40	ERDS2TJ184	R 69	ERDS2TJ472	R 113, 114	ERDS2TJ472	R 149, 150	ERDS2TJ392		
R 1, 2	ERDS2TJ563	R 41, 42	ERDS2TJ472			R 115, 116	ERDS2TJ682	R 151, 152	ERD25FJ102	R 181	ERDS2TJ102
R 3, 4	ERDS2TJ101	R 51	ERG12SJ820	R 70	ERDS2TJ223			R 153, 154	ERDS2TJ223	R 182	ERDS2TJ472
R 5, 6	ERDS2TJ684	R 52	ERG12SJ101	R 71	ERDS2TJ183	R 117, 118	ERDS2TJ560	R 155, 156	ERDS2TJ123	R 183	ERD25FJ1R0
R 7, 8	ERDS2TJ243	R 53	ERDS2TJ103	R 72	ERDS2TJ101	R 119, 120	ERDS2TJ473			R 184	ERDS2TJ682
R 9, 10	ERDS2TJ563	R 54	ERDS2TJ105	R 73	ERDS2TJ102	R 121, 122	ERDS2TJ474	R 157, 158	ERDS2TJ154	R 185	ERDS2TJ100
R 11, 12	ERDS2TJ183	R 55	ERDS2TJ104	R 74	ERDS2TJ472	R 123, 124	ERDS2TJ563	R 159, 160	ERDS2TJ152		
R 13, 14	ERDS2TJ472	R 56	ERDS2TJ103	R 75	ERDS2TJ103	R 125, 126, 127, 128		R 161, 162, 163, 164		R 187 [DB]	ERG12SJ100
R 15, 16	ERDS2TJ562	R 57	ERDS2TJ223	R 76	ERDS2TJ273		ERDS2TJ473		ERDS2TJ681	[For all European areas.]	
R 17, 18	ERDS2TJ272	R 58	ERDS2TJ562	R 77	ERDS2TJ333	R 129, 130	ERD25FJ392	R 165	ERDS2TJ102	[AN]	ERDS2TJ220
R 19, 20	ERDS2TJ822	R 59	ERDS2TJ103	R 78	ERDS2TJ152	R 131, 132	ERDS2TJ104	R 166	ERD25FJ102	[For Australia, Asia, Latin America, Middle East and Africa areas.]	
				R 79	ERDS2TJ221	R 133, 134	ERDS2TJ152	R 167	ERDS2TJ563		
R 21, 22	ERDS2TJ393	R 60	ERDS2TJ472			R 135, 136	ERDS2TJ474	R 168	ERDS2TJ105		
R 23, 24	ERDS2TJ473	R 61	ERDS2TJ332	R 80	ERDS2TJ103	R 137, 138	ERDS2TJ272	R 169	ERDS2TJ103	R 188	ERDS2TJ4R7
R 25, 26	ERDS2TJ105	R 62	ERDS2TJ103	R 81, 83	ERDS2TJ333			R 170	ERDS2TJ153	R 189	ERDS2TJ222
R 27, 28	ERDS2TJ684	R 63	ERDS2TJ332	R 101, 102	ERD25FJ100	R 139, 140	ERDS2TJ153			R 190	ERDS2TJ103
R 29, 30	ERDS2TJ473	R 64	ERDS2TJ154	R 103, 104	ERDS2TJ563	R 141, 142	ERDS2TJ102	R 171	ERDS2TJ272	R 191, 192	ERDS2TJ223
R 31, 32	ERDS2TJ332	R 65	ERDS2TJ104	R 105, 106	ERDS2TJ101	R 143, 144	ERDS2TJ680	R 173	ERDS2TJ222	R 193	ERDS2TJ222
R 33, 34	ERDS2TJ102	R 66	ERDS2TJ333	R 107, 108	ERDS2TJ124	R 145, 146	ERDS2TJ822	R 174	ERDS2TJ472	R 194	ERDS2TJ123
R 35, 36	ERDS2TJ274	R 67	ERDS2TJ391	R 109, 110	ERDS2TJ432	R 147	ERD25FJ562	R 175	ERDS2TJ561	R 195	ERDS2TJ563

Ref. No.	Part No.
R 196, 197	ERDS2TJ332
R 198, 199	ERDS2TJ103
R 200, 201	ERDS2TJ472
R 202	ERDS2TJ103
R 203	ERDS2TJ821
R 204	ERDS2TJ122
R 206	ERDS2TJ222
R 207	ERDS2TJ821
R 208	ERDS2TJ223
R 209, 210	ERDS2TJ103
R 211, 212	ERDS2TJ562
R 213	ERDS2TJ102
R 214	ERDS2TJ273
R 215	ERD25FJ103
R 216	ERDS2TJ563
R 217	ERDS2TJ152
R 218, 219	ERDS2TJ104
R 220	ERDS2TJ683
R 221	ERDS2TJ223
R 222, 223	ERDS2TJ103
R 224	ERDS2TJ104
R 225	ERDS2TJ103
R 226	ERDS2TJ563
R 227	ERDS2TJ223
R 228, 229, 230	ERDS2TJ272
R 231	ERDS2TJ103
R 232	ERDS2TJ153
R 233	ERDS2TJ473
R 234, 235	ERDS2TJ182
R 236, 237	ERDS2TJ562
R 238	ERDS2TJ272
R 239	ERDS2TJ472
R 240	ERDS2TJ223
R 241	ERDS2TJ562
R 242	ERDS2TJ103
R 243, 244	ERDS2TJ472
R 245, 246	ERDS2TJ103
R 246, 247, 248	ERDS2TJ102
R 249	ERDS2TJ562
R 250	ERDS2TJ103
R 251, 252	ERDS2TJ472
R 253, 254	ERDS2TJ103
R 255, 256	ERDS2TJ472
R 257	ERDS2TJ273
R 258	ERDS2TJ393
R 259	ERDS2TJ273
R 260, 261, 263, 265, 266, 267, 268	ERDS2TJ103
R 271	ERDS2TJ182
R 272, 273	ERDS2TJ563
R 274, 275, 276, 277, 278	ERDS2TJ122
R 279	ERDS2TJ103
R 280	ERDS2TJ102
R 281 ⚠	ERDS2TJ561
R 282 ⚠	ERDS2TJ681
R 283 [DB] [For all European areas.]	ERG12SJ150
R 284	ERDS2TJ472
R 285	ERDS2TJ393
R 286	ERDS2TJ103
R 287, 288	ERDS2TJ472
R 289	ERDS2TJ392
R 290	ERDS2TJ103
R 291	ERDS2TJ472
R 295	ERDS2TJ103
R 296	ERD25FJ182
R 301	ERDS2TJ561
R 302	ERDS2TJ820
R 303	ERDS2TJ103
R 304	ERDS2TJ562
R 305	ERDS2TJ181
R 306	ERDS2TJ103
R 307	ERDS2TJ105
R 308	ERDS2TJ332
R 309	ERDS2TJ122
R 310	ERDS2TJ563
R 311	ERD25TJ104

VARIABLE RESISTORS

VR 1, 2	EVNM0AA00B23
VR 101, 102	QVNB3A00B331
VR 103, 104	EWCRSAS15B24
VR 105, 106	QVNB3A00B104
VR 107, 108	QVNB3A00B224
VR 109	QVNB3A00B472
VR 301	QVJKAAF15B24

CAPACITORS

C 1, 2	ECKD1H331KB
C 3, 4	ECKD1H391KB
C 7, 8	ECCD1H151J
C 9, 10	ECQM1H472JZ
C 11, 12	ECEA25Z4R7
C 13, 14	ECQV05103JZ
C 15, 16	ECQM1H682JZ
C 17, 18	ECCD1H100J
C 19, 20	ECEA50MR33
C 21, 22	ECKD1H102KB
C 23, 24	ECQM1H392JZ
C 25, 26	ECCD1H390J
C 27, 28	ECQV05273JZ
C 29, 30	ECQM1H472JZ
C 31, 32	ECEA1HS100
C 33, 34	ECEA50ZR33
C 35, 36	ECQV05104JZ
C 37, 38	ECEA1HS100
C 39, 40	ECQM1H562JZ
C 41, 42	ECEA1HS100
C 43, 44	ECQV05473JZ
C 50	ECEA1AS470
C 51	ECEA1AS471
C 52	ECEA1AS331
C 53	ECEA1HS100
C 54	ECQV05104JZ
C 55	ECEA1HS100
C 56	ECQM1H392JZ
C 57	ECEA50ZR68
C 58	ECEA50Z1
C 59	ECEA50ZR22
C 60, 61	ECEA25Z4R7
C 62	ECEA1ES220
C 63	ECEA50Z1
C 64	ECEA1CS330
C 65	ECEA1ES220
C 68	ECEA1AS331
C 70	ECEA1AS102
C 71	ECEA1ES220
C 101, 102	ECKD1H681KB
C 103, 104	ECKD1H151KB
C 105, 106	ECKD1H102KB
C 107, 108	ECQV05273JZ
C 109, 110	ECEA25Z4R7
C 111, 112	ECQV05103JZ
C 113, 114	ECEA50Z1
C 115, 116	ECEA1HN010
C 117, 118	ECEA1HS100
C 119, 120	ECEA25Z4R7
C 121, 122	ECKD1H391KB
C 123, 124	ECEA50Z1
C 125, 126	ECQM1H392JZ
C 127, 128	ECQV05183JZ
C 129, 130	ECQM1H822JZ
C 131, 132	ECQV05223JZ
C 133, 134	ECKD1H221KB
C 135, 136	ECQV05103JZ
C 137, 138	ECQM1H272JZ
C 139, 140	ECEA50Z1
C 141, 142	ECKD1H152KB
C 145, 146	ECCD1H820J
C 147, 148	ECKD1H102KB
C 149	ECEA1AS470
C 150	ECEA25Z4R7
C 151, 152	ECCD1H101J
C 153	ECQP1822JZ
C 154	ECQM1H123JZ
C 155	ECEA25Z4R7
C 156	ECQM1H102JZ
C 158	ECEA25Z4R7
C 159	ECEA1ES220
C 160	ECEA50Z3R3
C 161	ECEA25Z4R7
C 162	ECEA1AS331
C 163, 164, 165	ECEA1ES220
C 166	ECEA1HS100
C 167, 168	ECEA25Z4R7
C 169	ECEA1ES220
C 171	ECEA1HS100
C 172	ECEA50Z1
C 173, 174, 175	ECFDD223KXY
C 176 ⚠	ECEA1CS222
C 177, 178 ⚠	ECEA1CS102
C 179, 180 ⚠	ECEA1CS331
C 181, 182	ECEA1EK4R7
C 183	ECQV05223JZ
C 184	ECQV05334JZ
C 301	ECEA50Z1
C 302	ECEA50ZR33
C 303, 304, 305	ECEA25Z4R7
C 306	ECKD1H102KB
C 601 ⚠	ECQU2A103MF

COMBINATION PARTS

CR 301	EXRP102K103W
CR 302, 303	EXRP102K472W

TRANSISTORS

Q 1, 2	2SC2603
Q 3, 4	2SD1468R
Q 5, 6, 7, 8	2SC2603
Q 9, 10	2SK381D
Q 11, 12	2SA1115E
Q 13, 14, 15, 16, 17, 18, 19	2SC2603
Q 20	DTA144F
Q 21	2SC2603
Q 101, 102, 103, 104	2SC2603
Q 105, 106	2SD471K
Q 107, 108	2SD1468R
Q 109, 110, 111, 112, 113, 114	2SC2603
Q 115, 116	2SA1115E
Q 117, 118, 119, 120, 121, 122, 123, 124, 125, 126	2SC2603
Q 127	DTA144F
Q 128	2SD1468R
Q 129	2SD471K
Q 130	2SD638R
Q 131	2SA952L
Q 132	DTA144F
Q 133	2SC2603
Q 135	2SA1115E
Q 136	DTA144F
Q 137	2SA1115E
Q 138	2SC2603
Q 139	2SA1115E
Q 140	DTA144F
Q 141	2SC2603
Q 142	2SA1115E
Q 143, 144, 145, 146, 147, 148	2SC2603
Q 149	DTA124F
Q 150, 151, 152, 153	2SC2603
Q 154	2SD985K
Q 155	2SD965Q
Q 156	2SD12650
Q 157	2SD471K
Q 158	2SB941P
Q 159	2SC2603
Q 301, 302	2SC2603

DIODES & RECTIFIERS

D1, 2, 3, 4, 5, 6, 7, 8, 10, 11,12, 14, 15, 16	1SS133
D 101, 102	1SS133
D 103	MC911
D 104, 105, 106	1SS133
D 107	MC911
D 109	1SS133
D 110	MC911
D 111	1SS133
D 112	MC921
D 113	MC911
D 114, 115	1SS133
D 116, 117	MC911
D 118	1SS133
D 119	MC921
D 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130	1SS133
D 131	MC921
D 132	1SS133
D 133	MC911
D 134, 135	OA90
D 137, 138	1SS133
D 139 ⚠	MTZ22C
D 140, 141 ⚠	SM112
D 142, 143 ⚠	S1VB20
D 144, 145, 146, 147, 148	1SS133
D 149, 150	OA90
D 301	1SS133
D 401	LD001GG
D 402	LD001UR
D 403	LN01201C
D 404	LN01301C
D 405, 406, 407, 408, 409	LN01201C
D 501	LD602VR

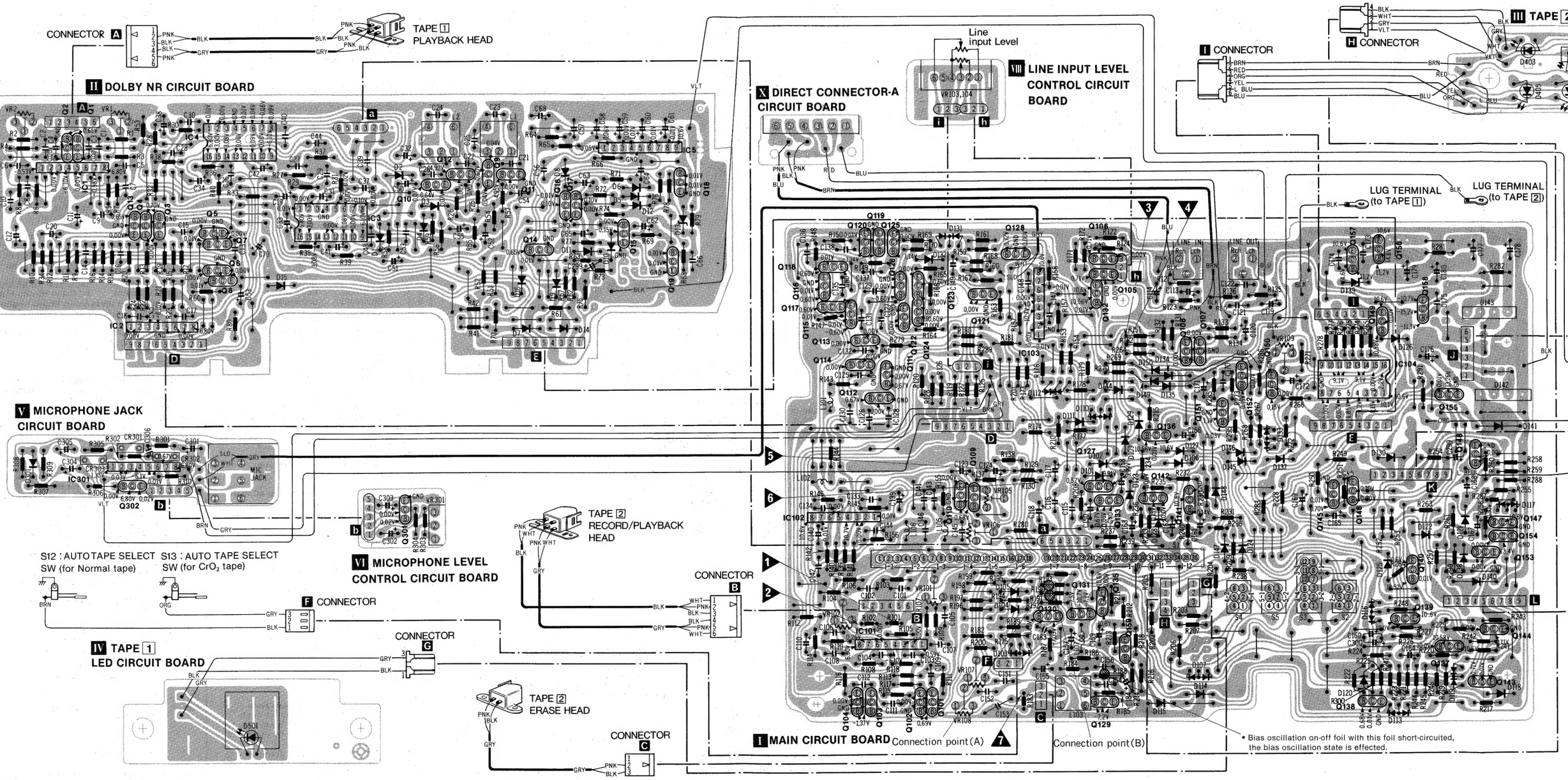
INTEGRATED CIRCUITS

IC 1	M5220L
IC 2	M5218L
IC 3, 4	NE646N
IC 5	BA336M
IC 101	M5220L
IC 102, 103	M5218L
IC 104	BA685
IC 301	M5219L

Ref. No.	Part No.	Part Name & Description
COILS		
L 1, 2	QLM9Z9K	MPX Coil
L 101, 102	QLQX0332KWA	Peaking Coil
L 103	QLB0205	Bias Oscillattion Coil
L 105, 106	QLQX0343KWA	Trap Coil
L 107	QLQX1021Y	Peaking Coil
TRANSFORMER		
T 1 [D] ⚠ [For all European areas except United Kingdom.]	QLPD81ELE	AC Power Transformer
[B] ⚠ [For United Kingdom.]	QLPD82ELE	AC Power Transformer
[N] ⚠ [For Asia, Latin America, Middle East and Africa areas.]	QLPN84ELE	AC Power Transformer
[A] ⚠ [For Australia.]	QLPA74ELE	AC Power Transformer

Ref. No.	Part No.	Part Name & Description
FUSES		
F 4 [D] ⚠ [For all European areas except United Kingdom.]	XBAQ0010	Fuse (T 1.6A)
F 5, 6 [DB] ⚠ [For all European areas.]	XBAQ0007	Fuse (T 400mA)
F 7 [DB] ⚠ [For all European areas.]	XBAQ0004	Fuse (T 1A)
F 8 [N] ⚠ [For Asia, Latin America, Middle East and Africa areas.]	XBA2E03NR5	Fuse (0.3A)
SWITCHES		
S 1	QSSC208	Slide Switch (Record/Playback Selector)
S 2, 3, 4, 5	QSWY410	Push Switch (Dolby NR, Dubbing/Mix, Tape Speed and REC Mute)
S 6	QSB0251	Leaf Switch (PLAY : TAPE [2])
S 7	QSB0251	Leaf Switch (FF/REW : TAPE[2])
S 8	QSB0251	Leaf Switch (PLAY : TAPE [1])
S 9	QSB0251	Leaf Switch (FF/REW : TAPE [1])
S 10	QSB0251	Leaf Switch (Normal Tape Detector : TAPE [1])
S 11	QSB0251	Leaf Switch (Record)
S 12	QSB0251	Leaf Switch (Normal Tape Detector : TAPE [2])
S 13	QSB0251	Leaf Switch (CrO_2 Tape Detector TAPE [2])
S 14	QSB0251	Leaf Switch (Pause : TAPE [1])
S 15	QSB0251	Leaf Switch (Pause : TAPE [2])
S 16	QSB0253	Leaf Switch (Motor : TAPE [2])
S 17	QSB0253	Leaf Switch (Motor : TAPE [1])
S 18 ⚠	QSW1117AT	Switch (for Power ON/OFF)
S 19 [BN] ⚠ [For United Kingdom, Asia, Latin America, Middle East and Africa areas.]	QSR1407H	AC Power Voltage Select Switch
JACKS		
J 1, 2, 3, 4	QEJ5033	Jack Board (LINE IN/OUT)
J 5	QJA0269	Microphone Jack
J 6 [B] ⚠ [For United Kingdom.]	QSJ9227	AC Outlet Socket
[DN] ⚠ [For all European areas, Asia, Latin America, Middle East and Africa areas.]	SJS9225	AC Outlet Socket
CONNECTORS		
CN 1	QJS1923TNL	Socket (9 Pin)
CN 2	QJP1923TN	Plug (9 Pin)
CN 3	QJP1922TN	Plug (6 Pin)
CN 4	QJP1921TN	Plug (3 Pin)
CN 5	QJP06S001T	6 Pin Connector Plug
CN 6	QJP04S001T	4 Pin Connector Plug
CN 7	QJP03S001T	3 Pin Connector Plug
CN 8	QJT0053	Pin Terminal
CN 9	QJS03001T	3 Pin Socket
CN 10	QJT1750	Contact
CN 11	QJS1923TN	9 Pin Socket
CN 12	QJT1054	12 Contact
CN 13	QJT1022	Contact
CN 14	QJS1921TN	3 Pin Socket
CN 15	QJS1922TN	6 Pin Socket
CN 16	QJS04001T	4 Pin Socket
CN 17	QJS06001T	6 Pin Socket
CN 18 [DB] [For all European areas.]	QJS1961S	Jumper Socket (5 Pin)

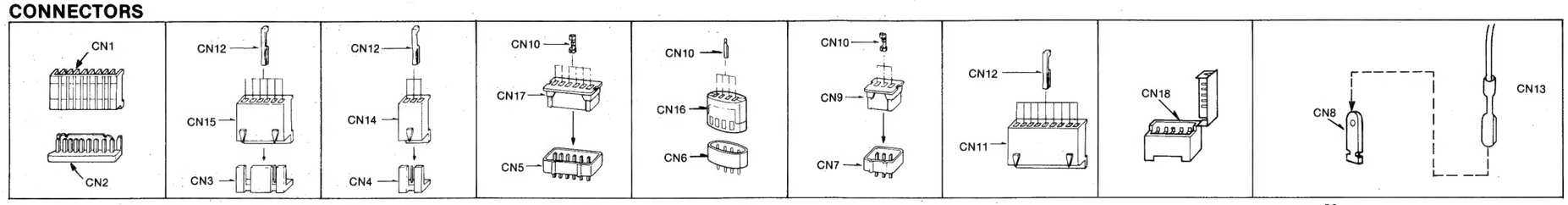
CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

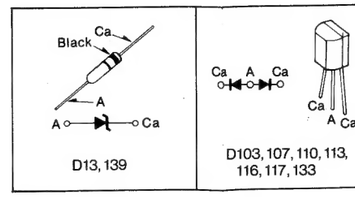


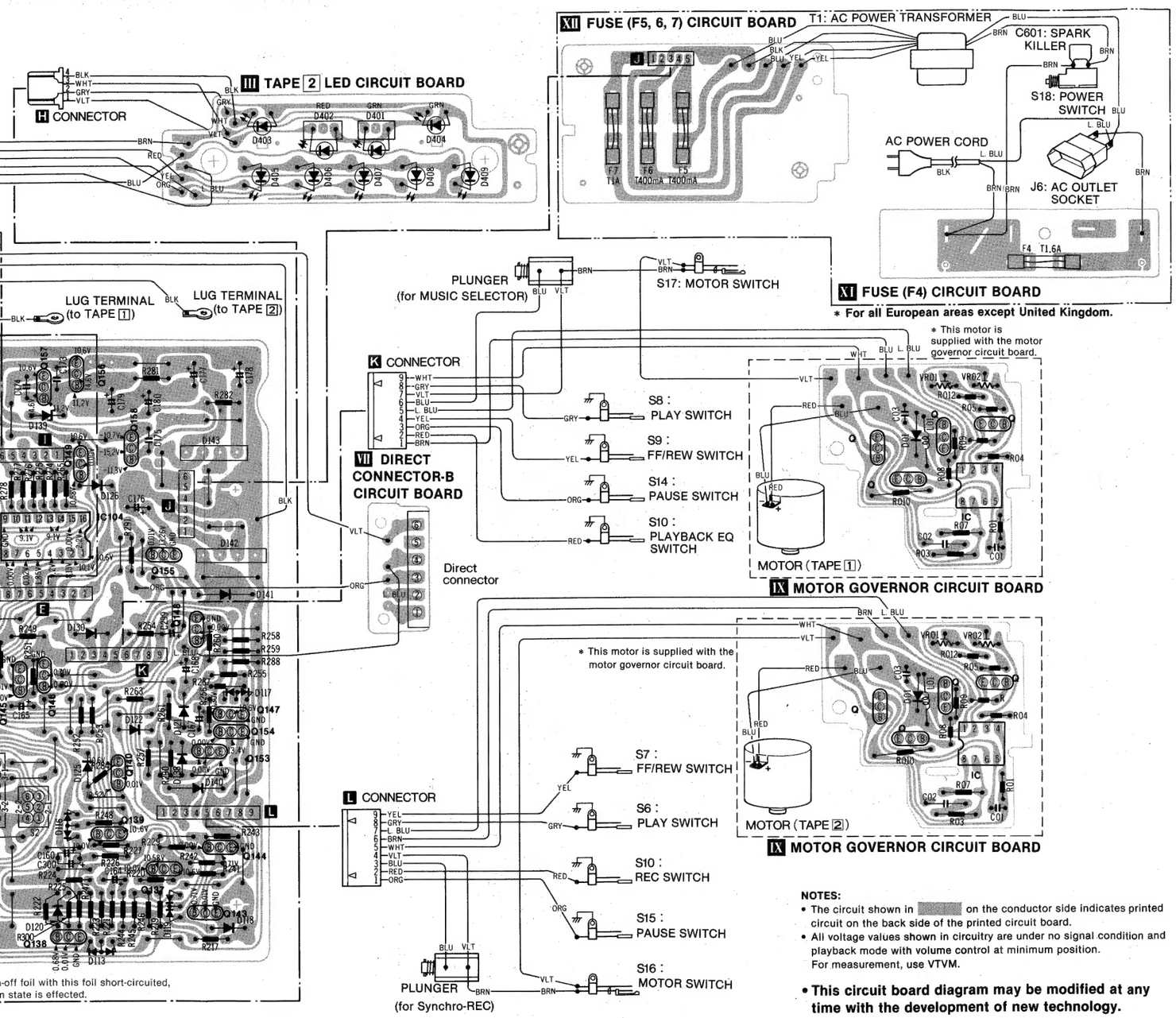
NOTES:

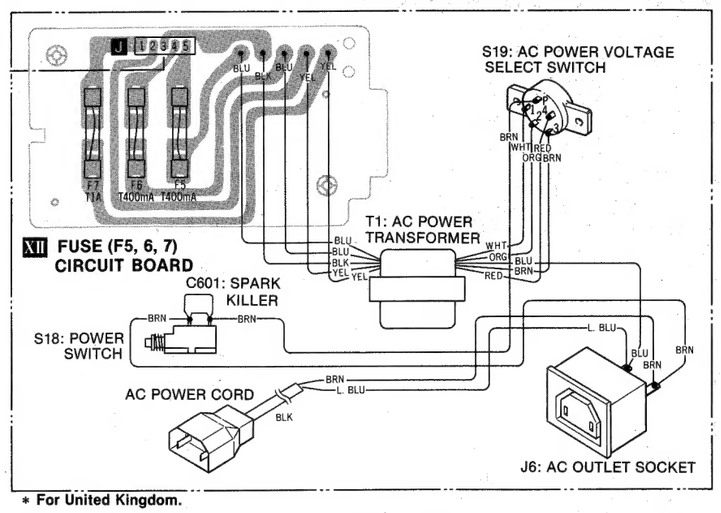
BLK .....Black
BLU .....Blue
BRN.....Brown
GRY.....Gray
GRN .....Green
L. BLU ....Light Blue
NIL.....No Color Mark
ORG .....Orange
PNK.....Pink
RED.....Red
SLD .....Shield Wire
VLT.....Violet
WHT .....White
YEL.....Yellow

CONNECTORS







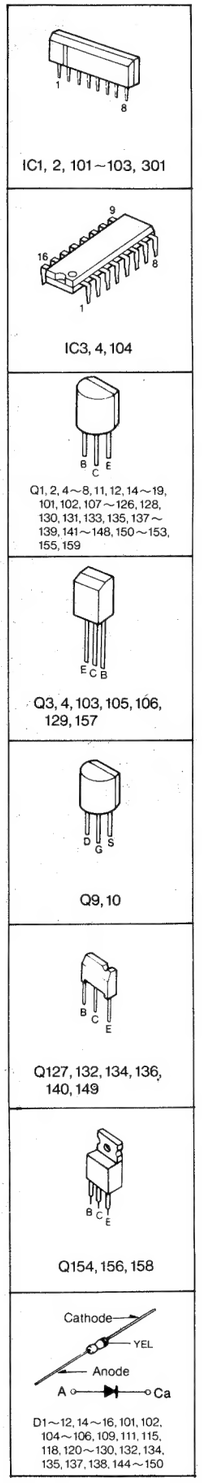


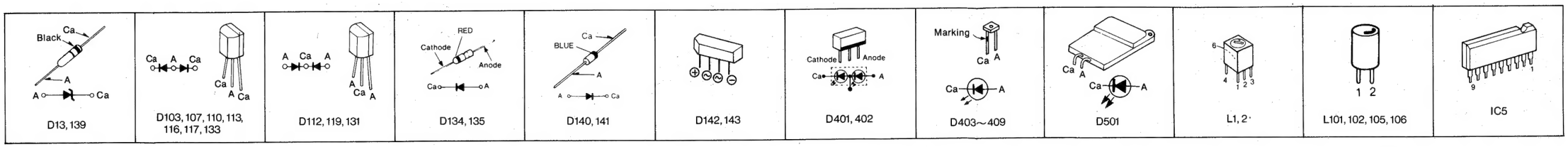
NOTES:

- The circuit shown in ▒▒▒ on the conductor side indicates printed circuit on the back side of the printed circuit board.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position. For measurement, use VTVM.

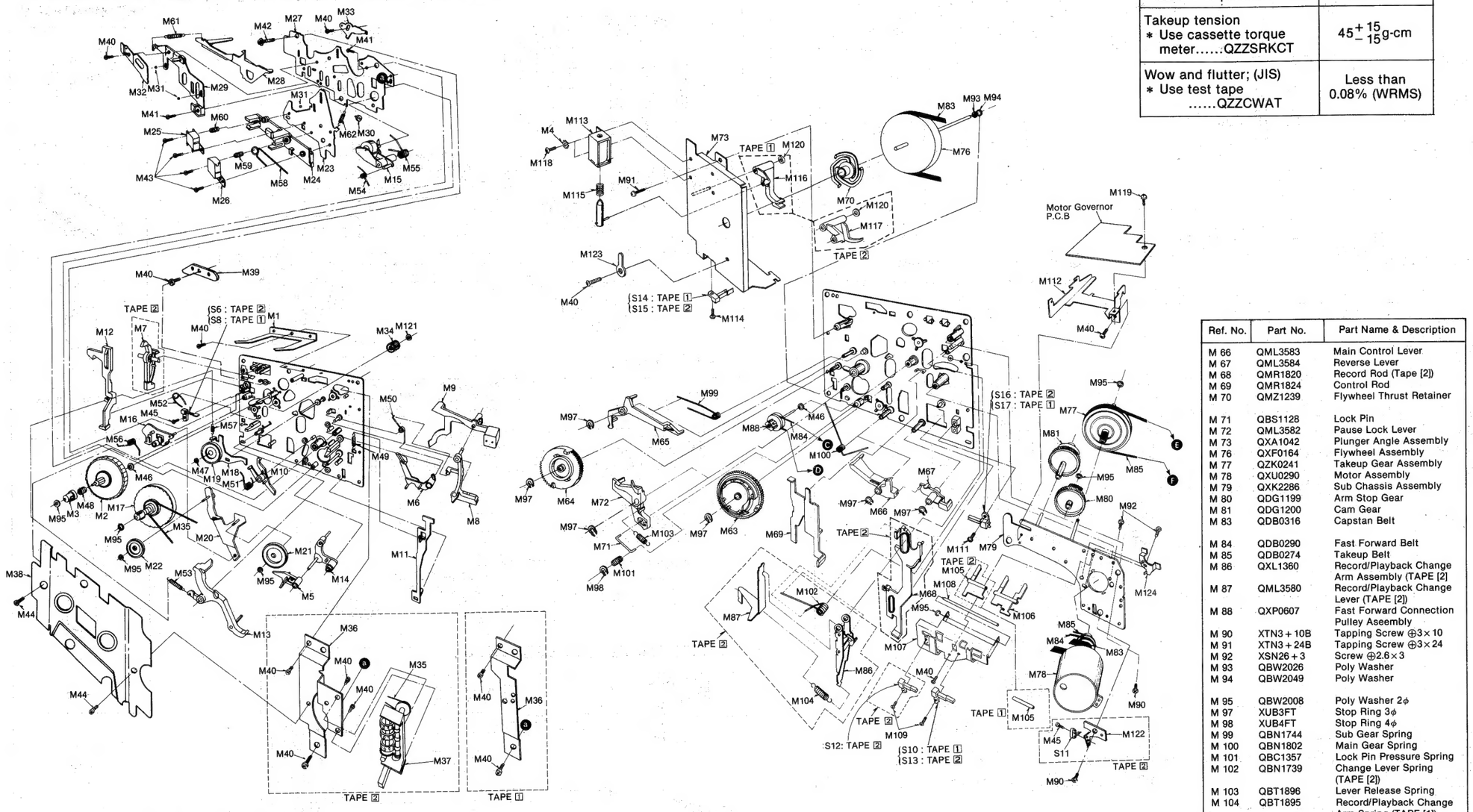
• This circuit board diagram may be modified at any time with the development of new technology.

TERMINATIONS





MECHANICAL PARTS LOCATION



SPECIFICATIONS

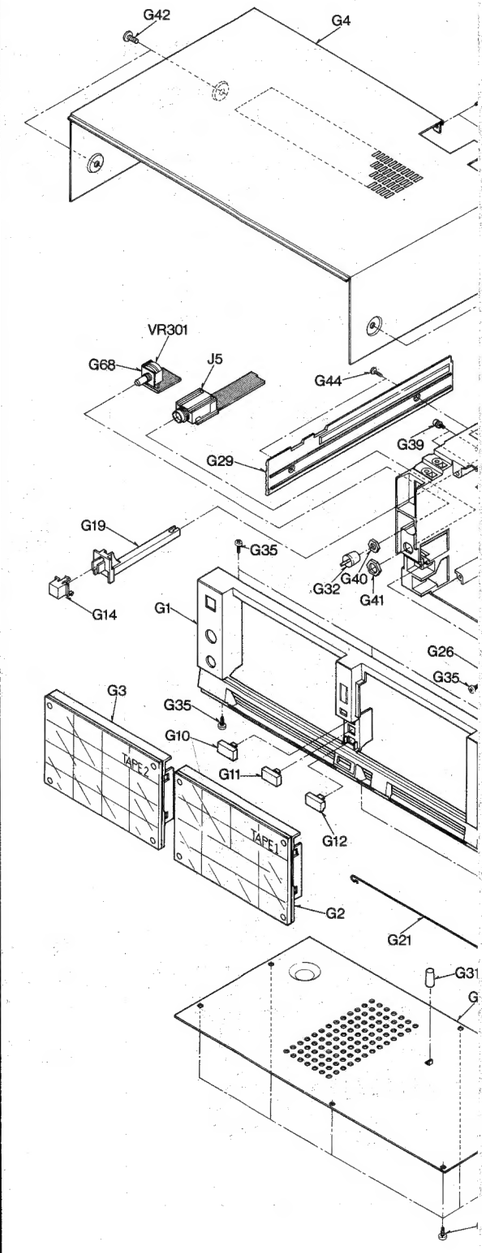
Pressure of pressure roller	350±50g
Takeup tension * Use cassette torque meter.....QZZSRKCT	45^{+15}_{-15}g-cm
Wow and flutter; (JIS) * Use test tape .....QZZCWAT	Less than 0.08% (WRMS)

Ref. No.	Part No.	Part Name & Description
M 66	QML3583	Main Control Lever
M 67	QML3584	Reverse Lever
M 68	QMR1820	Record Rod (Tape [2])
M 69	QMR1824	Control Rod
M 70	QMZ1239	Flywheel Thrust Retainer
M 71	QBS1128	Lock Pin
M 72	QML3582	Pause Lock Lever
M 73	QXA1042	Plunger Angle Assembly
M 76	QXF0164	Flywheel Assembly
M 77	QZK0241	Takeup Gear Assembly
M 78	QXU0290	Motor Assembly
M 79	QXK2286	Sub Chassis Assembly
M 80	QDG1199	Arm Stop Gear
M 81	QDG1200	Cam Gear
M 83	QDB0316	Capstan Belt
M 84	QDB0290	Fast Forward Belt
M 85	QDB0274	Takeup Belt
M 86	QXL1360	Record/Playback Change Arm Assembly (TAPE [2]
M 87	QML3580	Record/Playback Change Lever (TAPE [2])
M 88	QXP0607	Fast Forward Connection Pulley Aseembly
M 90	XTN3 + 10B	Tapping Screw ⊕3×10
M 91	XTN3 + 24B	Tapping Screw ⊕3×24
M 92	XSN26 + 3	Screw ⊕2.6×3
M 93	QBW2026	Poly Washer
M 94	QBW2049	Poly Washer
M 95	QBW2008	Poly Washer 2φ
M 97	XUB3FT	Stop Ring 3φ
M 98	XUB4FT	Stop Ring 4φ
M 99	QBN1744	Sub Gear Spring
M 100	QBN1802	Main Gear Spring
M 101	QBC1357	Lock Pin Pressure Spring
M 102	QBN1739	Change Lever Spring (TAPE [2])
M 103	QBT1896	Lever Release Spring
M 104	QBT1895	Record/Playback Change Arm Spring (TAPE [1])
M 105	QMC0136	Spacer (for TAPE [1])
	QML3644	Tape Detection Lever-A (for Metal) (TAPE [2])
M 106	QML3645	Tape Detection Lever-B (for CrO_2)
M 107	QMA4228	Detection Lever Angle-B
M 108	QMS2546	Detection Lever Shaft
M 109	XSN2 + 5	Screw ⊕2×5
M 111	XTN2 + 10B	Tapping Screw ⊕2×10
M 112	QMA4640	Circuit Board Angle
M 113	QME0157	Plunger
M 114	XTN2 + 6B	Tapping Screw ⊕2×6
M 115	QBC1358	Plunger Release Spring
M 116	QML3616	Lock Release Lever
M 117	QML3607	Pause Connection Lever (TAPE [2])
M 118	XSN3 + 6S	Screw ⊕3×6
M 119	XSN26 + 8	Screw ⊕2.6×8
M 120	QBW2083	Washer
M 121	QBW2085	Poly Washer
M 122	QMA4643	Switch Angle (TAPE [2])
M 123	QJT0055	Lug Terminal
M 124	QMA4678	Protection Angle (for Belt)

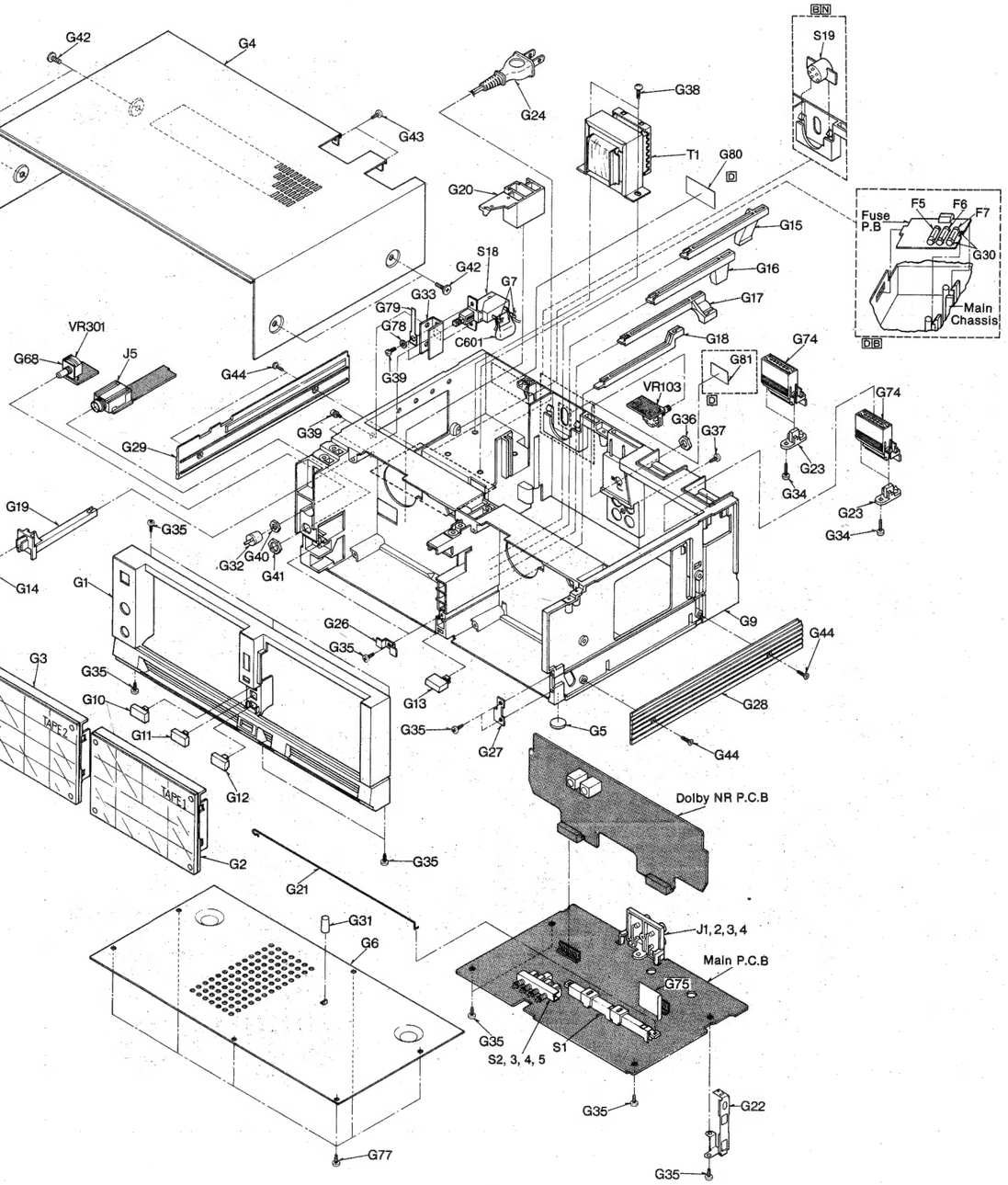
REPLACEMENT PARTS LIST

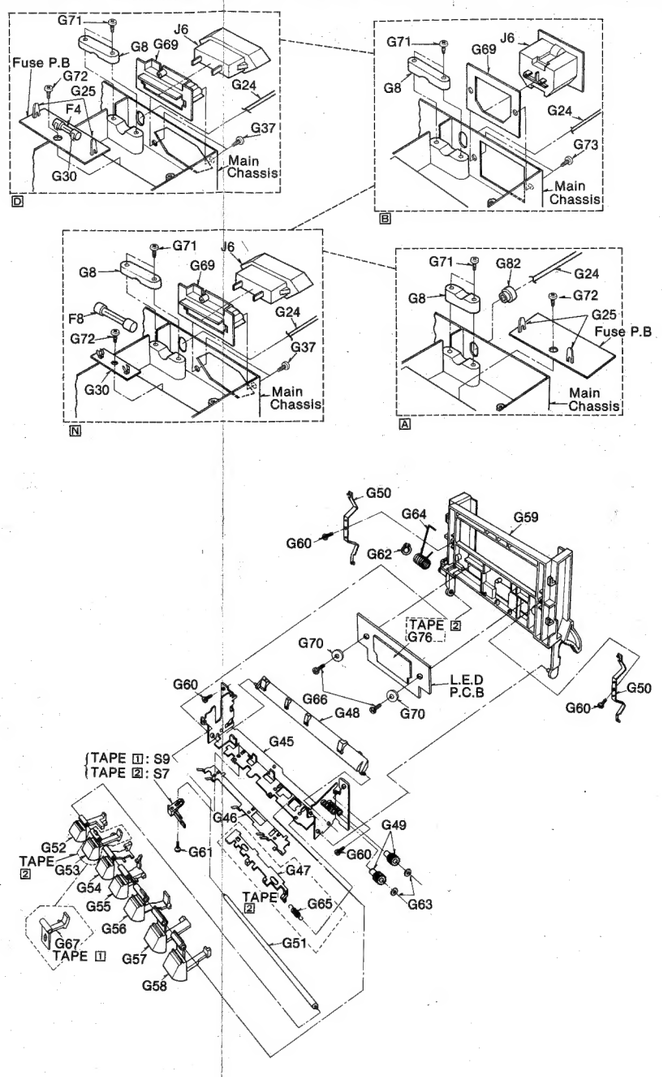
Ref. No.	Part No.	Part Name & Description
		MECHANIAL PARTS
M 1	QBP1874	Cassette Retainer Spring
M 2	QDR1139	Reel Table
M 3	QMB1336	Supply Reel Table Hub
M 4	XWC3B	Washer
M 5	QML3586	Music Select Lever
M 6	QML3594	Auto Stop Release Arm
M 7	QML3603	Erase Safety Lever (TAPE [2])
M 8	QML3604	Auto Stop Driving Lever
M 9	QML3605	Auto Stop Detection Lever
M 10	QML3592	Change Lever
M 11	QMR1821	Auto Stop Connection Rod
M 12	QMR1822	Eject Rod
M 13	QXL1355	Main Lever Assembly
M 14	QXL1354	Sub Lever Assembly
M 15	QXL1381	Pressure Roller Lever
M 16	QML3588	Fast Forward Lever
M 17	QXD1143	Takeup Reel Table Assembly
M 18	QXL1382	Idler Lever Assembly
M 19	QXi0111	Takeup Idler Assembly
M 20	QXL1383	Fast Forward Arm Assembly
M 21	QXi0112	Rewind Idler Assembly
M 22	QXi0113	Fast Forward Idler Assembly
M 23	QMK1840	Head Base Plate
M 24	QMZ1241	Head Spacer
M 25	QWY2168Z	Erase Head [for TAPE [1]]
	QWY2138Z	Erase Head [for TAPE [2]]
M 26	QXV0185	Record/Playback Head Assembly
M 27	QMK1838	Upper Base Plate
M 28	QML3591	Brake Arm
M 29	QMZ1240	Sub Head Base Plate
M 30	QMN2550	Roller
M 31	QDK1017	Steel Ball
M 32	QBP1873	Head Base Plate Pressure Spring
M 33	QMA3858	Head Adjustment Plate
M 34	QDP1828	Fast Forward Pulley
M 35	QDB0167	Counter Belt [for TAPE [2]]
M 36	QMA4437	Holding Angle [for TAPE [1]]
	QMAM0162	Counter Angle [for TAPE [2]]
M 37	QXA1379	Counter Assembly [for TAPE [2]]
	"Silver Type" QXA1379K	Counter Assembly [for TAPE [2]]
	"Black Type"	
M 38	QXH0438	Chassis Cover-[1] [for TAPE [1]]
	QXH0439	Chassis Cover-[2] [for TAPE [2]]
M 39	QMF2118	Lock Plate
M 40	XTN26 + 6B	Tapping Screw ⊕2.6×6
M 41	XTN26 + 10B	Tapping Screw ⊕2.6×10
M 42	XTN26 + 12B	Tapping Screw ⊕2.6×12
M 43	XSN2DW9	Screw ⊕2×9
M 44	XTN26 + 6BFZ	Tapping Screw ⊕2.6×6
M 45	XTN2 + 6B	Tapping Screw ⊕2×6
M 46	QBW2012	Poly Washer
M 47	QBW2008	Poly Washer 2φ
M 48	QBC1372	Reel Table Spring
M 49	QBT1682	Auto Stop Connection Rod Spring
M 50	QBN1746	Auto Stop Lever Spring
M 51	QBN1741	Change Lever Spring
M 52	QBN1747	Connection Spring
M 53	QBT1894	Main Lever Spring
M 54	QBN1742	Pressure Roller Release Spring
M 55	QBN1743	Pressure Roller Spring
M 56	QBN1748	Fast Forward Spring
M 57	QBT1893	Idler Spring
M 58	QBN1740	Head Spring
M 59	QBC1278	Head Spring
M 60	QBCA0008	Head Spring
M 61	QBT1597	Brake Arm Spring
M 62	QBT1892	Head Release Spring
M 63	QDG1201	Main Gear
M 64	QDG1202	Sub Gear
M 65	QML3581	Sub Control Lever

CABINET PARTS LOCA



CABINET PARTS LOCATION





NOTES:

- D ..... For all European areas except United Kingdom.
- B ..... For United Kingdom.
- N ..... For Asia, Latin America, Middle East and Africa areas.
- A ..... For Australia.

REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
	CABINET PARTS	
G 1	QYPM0074 "Silver Type"	Front Panel Assembly
	QYPM0074K "Black Type"	Front Panel Assembly
G 2	QYFM0068 "Silver Type"	Cassette Lid-[1] (TAPE [1])
	QYFM0068Y "Black Type"	Cassette Lid-[1] (TAPE [1])
G 3	QYFM0069 "Silver Type"	Cassette Lid-[2] (TAPE [2])
	QYFM0069Y "Black Type"	Cassette Lid-[2] (TAPE [2])
G 4	QGCM0071 "Silver Type"	Case Cover
	QGCM0071K "Black Type"	Case Cover
G 5	SKL245-4	Rubber Foot
G 6	QYBM0049	Bottom Cover Assembly
G 7[DBA]	QTD1315	Cord Clamper
	[For all European areas and Australia.]	
G 8	QTD1164	Cord Bushing
G 9 [DN]	QKMM0055K	Main Chassis
	[For all European areas except United Kingdom, Asia, Latin America, Middle East and Africa areas.]	
[B]	QKMM0056K	Main Chassis
	[For United Kingdom.]	
[A]	QKMM0054K	Main Chassis
	[For Australia.]	
G 10	QGOM0128 "Silver Type"	Push Button (Dolby NR)
	QGM128K "Black Type"	Push Button (Dolby NR)
G 11	QGOM0129 "Silver Type"	Push Button (Dubbing/Mix)
	QGOM129K "Black Type"	Push Button (Dubbing/Mix)
G 12	QGOM0130 "Silver Type"	Push Button (Tape Speed)
	QGOM130K "Black Type"	Push Button (Tape Speed)
G 13	QGOM0131	Push Button (for REC Mute)
G 14	QGOM0132	Push Button (for Power ON/OFF)
G 15	QKJM0122	Dolby NR Switch Rod
G 16	QKJM0123	Dubbing/Mix Switch Rod
G 17	QKJM0124	Tape Speed Switch Rod
G 18	QKJM0125	REC Mute Switch Rod
G 19	QKJM0121	Power Switch Rod
G 20	QML3907	Recording Lever
G 21	QBSM0011	Recording Wire
G 22	QTSM0085	Earth Plate
G 23	QKJM0077	Direct Connector Holding Plate
G 24		
[DN] ⚠	SJA151	AC Power Cord
	[For all European areas except United Kingdom, Asia, Latin America, Middle East and Africa areas.]	
[B] ⚠	SJA149-1	AC Power Cord
	[For United Kingdom.]	
[A] ⚠	QFC1208M	AC Power Cord
	[For Australia.]	
G 25		
[DA] ⚠	SJT777	Terminal (for AC Power Cord)
	[For all European areas except United Kingdom and Australia.]	
G 26	QMAM0160	Stopper-(1)
G 27	QMAM0161	Stopper-(2)
G 28	QGKM0206 "Silver Type"	Side Panel-R
	QGKM0206K "Black Type"	Ornament (R)
G 29	QGKM0207 "Silver Type"	Side Panel-L
	QGKM0207K "Black Type"	Ornament (L)
G 30		
[DB] ⚠	QTF1054	Fuse Holder
	[For all European areas.]	
[N] ⚠	QTF1056	Fuse Holder
	[For Asia, Latin America, Middle East and Africa areas.]	
G 31	QKJM0119	Spacer
G 32	SBN1085-6	Microphone Knob
G 33	QMAM0163	Power Switch Angle
G 34	XTN3 + 12B	Tapping Screw ⊕3×12
G 35	XTN3 + 10B	Tapping Screw ⊕3×10
G 36	XNS8	Nut (8φ)
G 37	XTN3 + 10BFZ	Tapping Screw ⊕3×10
G 38	XTN4 + 12B	Tapping Screw ⊕4×12
G 39	XSN3 + 6S	Screw ⊕3×6
G 40	XNS7	Nut (7φ)
G 41	QNQ1070	Nut (10φ)
G 42	QHQ1324 "Silver Type"	Ornament Screw
	QHQ1324K "Black Type"	Ornament Screw
G 43	XTB3 + 10BFZ	Tapping Screw ⊕3×10
G 44	XTS3 + 8BFN "Silver Type"	Screw ⊕3×8
	XTS3 + 8BFZ "Black Type"	Screw ⊕3×8
G 45	QXA1044	Operation Button Angle Assembly
G 46	QBP1875	Operation Button Spring
G 47	QMR1823	Obstruction Rod (TAPE [2])
G 48	QML3649	Lock Arm (TAPE [1])
	QML3593	Lock Arm (TAPE [2])
G 49	QDG1102	Dumper Gear
G 50	QBP1923A	Holder Spring
G 51	QMN2554	Operation Button Shaft
G 52	QXL1657	Eject Button Assembly
G 53	QXL1658	Record Button Assembly (TAPE [2])
G 54	QXL1659	Rewind/Review Button Assembly
G 55	QXL1660	F.F/Cue Button Assembly
G 56	QXL1661	Playback Button Assembly
G 57	QXL1662	Stop Button Assembly
G 58	QXL1663	Pause Button Assembly
G 59	QKFM6011K	Cassette Holder
G 60	XTN26 + 6B	Tapping Screw ⊕2.6×6
G 61	XTN2 + 6B	Tapping Screw ⊕2×6
G 62	XUB5FT	Stop Ring
G 63	QBW2082	Poly Washer
G 64	QBN7008	Eject Spring
G 65	QBT1597	Obstruction Rod Spring (TAPE [2])
G 66	XTN26 + 6B	Tapping Screw ⊕2.6×6
G 67	QML3601	Record Dummy Lever (TAPE [1])
G 68	QTSM0086	Earth Plate (for VR301)
G 69[DN]	QKJM0086	AC Outlet Holding Plate
	[For all European areas except United Kingdom, Asia, Latin America, Middle East and Africa areas.]	
[B]	QMAM1059	AC Outlet Holding Plate
	[For United Kingdom.]	
G 70	QBK7126	Poly Washer
G 71		
[DBN]	XTN3 + 16B	Tapping Screw ⊕3×16
	[For all European areas, Aasia, Latin America, Middle East and Africa areas]	
[A]	XTB3 + 12BFN	Tapping Screw ⊕3×12
	[For Australia.]	
G 72[DN]	XTN3 + 10B	Tapping Screw ⊕3×10
	[For all European areas, Asia, Latin America, Middle East and Africa areas.]	
G 73 [B]	XSN3 + 8BVS	Screw ⊕3×8
	[For United Kingdom.]	
G 74	SJS9607	Direct Connector-A
G 75	QTSM0089	Shield Board
G 76	QKJM0120	L.E.D. Spacer [TAPE [2]]
G 77	XTN3 + 10B	Tapping Screw ⊕3×10
G 78	XWA3B	Washer 3φ
G 79	QTD1319	Cord Clamper
G 80 [D]	QGSM0202	Main Name Plate
	[For all European areas except United Kingdom.]	
[B]	QGSM0204	Main Mane Plate
	[For United Kingdom.]	
[N]	QGSM0205	Main Mane Plate
	[For Asia, Latin America, Middle East and Africa areas.]	
[A]	QGSM0206	Main Mane Plate
	[For Australia.]	
G 81 [D]	QGK1735	Hole Cap
	[For all European areas except United Kingdom.]	
G 82 [A]	QBJ1425	Cord Bushing
	[For Australia.]	
	ACCESSORIES	
A 1	QQT3516	Instruction Book
A 2	SHE135 "Silver Type"	Stabilizing Pin
	SHE135-1 "Black Type"	Stabilizing Pin
	PACKINGS	
P 1[DBA]	QPNM0209	Inner Carton
	[For all European areas and Australia.]	
[N]	QPNM0210	Inner Carton
	[For Asia, Latin America, Middle East and Africa areas.]	
P 2	QPAM0061	Cushion-R
P 3	QPAM0062	Cushion-L
P 4[DBA]	QPSM0009	Pad
	[For all European areas and Australia.]	
P 5	XZB40X50A02	Poly Bag (for UNIT)
P 6	QPQ1052	Poly Sheet (for AC Power Cord)

MNE H.M D DK B BK N NK A AK Printed in Japan